The Opportunity Schools of South Carolina

An Experimental Study

By
William S. Gray
Wil Lou Gray
J. W. Tilton

Conducted by
THE STATE DEPARTMENT OF EDUCATION
OF SOUTH CAROLINA

—

AMERICAN ASSOCIATION
FOR ADULT EDUCATION
INCORPORATED 1926
SIXTY EAST FORTY-SECOND STREET
NEW YORK CITY

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by

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Preface

FOR several decades, vigorous effort has been made in many sections of the country to provide classes and schools for adults of limited education. These opportunities have taken various forms such as evening classes held once or twice a week; day classes conducted at frequent intervals in the home, in mills or factories, and in various types of community centers; all day schools; and short term schools held for two or more hours a day during inter-crop seasons in rural communities or during periods of non-employment in industrial centers. Such opportunities have proved very valuable in reducing illiteracy, in extending the experience and enriching the lives of students, in increasing their social efficiency, and in preparing them for vocational advancement.

One of the unique advantages of the types of schools and classes that have been described is that they are located, as a rule, near the homes of those who attend. Under these conditions, instruction can be given without interrupting seriously the daily routine of the students. Associated with these advantages are certain limitations which often prove very serious. For example, it is often impossible to establish classes and schools in isolated communities. As a result many who might otherwise go to school are deprived of the privilege. Furthermore, home duties make it impossible for many adults to attend during the hours that schools or classes are in session. Again, many who do attend are undernourished or are too tired after a day of hard work to profit much from the instruction given. Finally, it is practically impossible to provide appropriate instructional materials and satisfactory seating and hygienic conditions in many local centers. In order to overcome some of these limitations and to supplement the opportunities provided in local communities, so-called opportunity schools have been developed in a few centers which are attended by students from wide areas. These schools make it possible for adults to attend classes and study regularly for two, three or more weeks in centers where superior instruction can be given. Brief reference to three such schools may help to make clear the character of the service which they render.

A unique type of opportunity school is held in January each year at Berea College in Kentucky which is open to men and women, regardless of previous preparation, who are eighteen or more years of age and who are eager to learn. According to the Berea bulletin for 1932, the school offers opportunity to "men and women who have had experience in earning and making a living to come together for a period of study and refreshment. As far as possible the directors will plan each person's program so as to meet his particular needs. Last year one man specialized in wood work and another in motor mechanics but both joined the group lectures and discussions that were of interest to all. . . . No matter how long it is since you left school, or how much or how little schooling you have had, you can be a part of this group of alert men and women whose minds are still growing. No tests, grades or credits are given."

A second type of opportunity school is held each summer at Bryn Mawr College for a somewhat more specialized group. "The object of the school," as stated by the Joint Administration Committee of Bryn Mawr in 1921 "is to offer young women of character and ability a fuller education in order that they may widen their influence in the industrial world, help in the coming social reconstruction, and increase the happiness and usefulness of their own lives."

A third type of opportunity school which differs from those at Berea College and Bryn Mawr in several important respects has been held each summer for eleven years in South Carolina. As stated in some of the early announcements, this school is for boys and girls over 14 years of age and for men and women who in youth "did not have a chance to learn to read, write and figure, but who now long for an opportunity to study." Although it was intended at first to limit the school to those who were illiterate or nearly so, the school has extended the scope of the work covered until now it provides courses covering the field of adult elementary education and an introduction to the secondary-school field.

The purpose, scope and activities of these opportunity schools have attracted national attention. They provide unique opportunities not supplied by other adult agencies, including the tax-supported Opportunity School at Denver which is an integral part of the public school system. They make it possible for young people and adults from various sections of a state to attend school for a few weeks in an institution where the material needs of life are provided, a stimulating

environment created, and efficient instruction given. Unfortunately no detailed studies have been made thus far of the values derived, the learning problems encountered and the nature of the progress made by different types of students who attend. Accordingly it seemed advisable to the State Department of Education of South Carolina, to carry on an intensive study during the summer of 1931 of the problems, needs, and possibilities of the type of opportunity school conducted annually in that state. It was believed that the findings would not only be of great value in modifying and enriching the work done in South Carolina but in stimulating other sections of the country to provide similar opportunities.

Accordingly application was made to the American Association for Adult Education for sufficient financial assistance to conduct the opportunity school during the summer of 1931 on an experimental basis. On recommendation of the Executive Committee of that Association, a subsidy was granted by the Carnegie Corporation of New York to the State Department of Education of South Carolina. The subsidy provided two thousand dollars for scholarships, one thousand dollars for the use of Miss Wil Lou Gray, State Supervisor of Adult Education, in setting up the experiment and in providing the needed materials of instruction, one thousand dollars for the services of a psychologist and expert in the field of tests and measurements, and one thousand dollars to defray expenses incurred in the general organization and supervision of the experiment. Other necessary expenses, such as the salaries of the teaching staff and the general administration of the school were assumed by the State Department of Education or provided for through contributions from loyal citizens of the state. Dr. J. W. Tilton, Department of Education, Yale University, was secured as the psychologist and testing expert. Dr. William S. Gray, Department of Education, the University of Chicago, was asked to assist in organizing and supervising the experiment and in preparing the report. The purpose and scope of the experiment, the steps taken, and the findings and interpretations are presented in the chapters that follow. Miss Wil Lou Gray and Miss Erin Kohn, Dean of the Clemson Opportunity School, were primarily responsible for the content of Chapters II, IV and V, Dr. Tilton for Chapters III, VI and VII, and Dr. Gray for the general organization of the report, for the Preface and Chapters I and VIII and for editing and unifying the various chapters.

Grateful acknowledgment is hereby made to the American Association for Adult Education and to the Carnegie Corporation for the financial assistance provided, to the State Department of Education of South Carolina for the salaries of the teachers, to Clemson College and Seneca Junior College for the use of their plants, to members of the Clemson College faculty and to others for inspiring lectures, to the teachers and volunteer workers for their untiring services, and to numerous organizations and individuals for cooperation in recruiting and sending students to the school and in providing scholarships and other material assistance.

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THE STUDENTS OF CLEMSON OPPORTUNITY SCHOOL, AUGUST, 1931

I

The Experiment

DURING the summer of 1931 an experimental study was carried on in the Opportunity Schools held at Clemson College and at Seneca Junior College in South Carolina for adults of limited education. The chief purposes of the study were to determine critically and objectively, within limits which will be defined later, first, the progress of adults of limited education when favorable conditions for learning are provided, and second, the limitations of the instruction given for students of different levels of capacity and varying amounts of achievement in the fundamental tools of learning. It was believed that the results of such a study would be of great value not only in reorganizing the scope and improving the character of the work done in the schools studied, but also in stimulating the organization of opportunity schools in other centers. Before discussing the nature and scope of the experiment at greater length, it will be desirable to consider briefly the origin, development, and aims of the Opportunity School in South Carolina.

The Opportunity School of South Carolina

The first Opportunity School in South Carolina was organized in 1921 by the State Supervisor of Adult Education. Its purpose was to extend to illiterate and near-illiterate girls and women the opportunity to secure continuous instruction for a period of time in a stimulating environment and under conditions conducive to rapid learning. The school was held during the month of August at Tamassee, South Carolina, in the foothills of the Blue Ridge Mountains. It offered instruction in reading, writing, arithmetic, spelling, health habits, civics, good manners, domestic science, and arts and craft work. Thirty-six students enrolled.

The results of the first Opportunity School were so encouraging that the State Department of Education with the cooperation of the Board of Education of the Upper South Carolina Methodist Conference and

Lander College organized a vacation school at that college during the summer of 1922. It was limited to girls and women of little or no education who were eager to learn. The opening of the college for this purpose, as pointed out in the Opportunity School Bulletin for 1922, "marked a new epoch in our educational history, since it gave a chance for summer study and recreation of a high character to girls from the work-a-day world." Eighty-nine students from all sections of the state enrolled. Their ages ranged from fourteen to fifty-one, the average being eighteen. The average number of years of previous schooling was three. Hence a majority of the students did about third-grade work although instruction was provided from the first through the fifth.

In 1923 the Opportunity School was enlarged to include men. The women met as in 1922 at Lander College. Provision was made for the men at Erskine College through the courtesy of the Board of Trustees of that institution and the Educational Commission of the State Baptist Convention. The bulletin for 1923 included an illuminating statement of the expanding purpose and scope of the work of the school. "This summer will see the beginning of South Carolina's first opportunity school for boys and men. For years institutions have offered summer courses to the educated—teachers, ministers, and doctors—but this summer the doors of a college will be thrown wide open to the neglected and forgotten men of the mill, the farm and the home, in order that life for them might be made easier, happier, and more useful. . . . While emphasis will be placed on teaching the three Rs, yet the students will have all the cultural contacts connected with college life. Aside from the drill work of the classroom there will be lectures, musicales, and educational pictures."

The combined registration in 1923 was 180. In 1924 the girls and women met at Lander College, and in 1925–7 at Anderson College. The boys and men in the meantime continued their work at Erskine College. From 1928 to 1930 the entire school met at Erskine College. The school was transferred to Clemson College in the summer of 1931 in the belief that more efficient work could be done through the consolidation of the two schools. At the close of the school in 1931 the total enrollment for the eleven years had reached 1797. On September 27, 1931, *The State: Columbia, S. C.*, published an article, defining the current purpose and scope of the work of the school in the following terms: "The purpose of the Opportunity School is to provide a college

vacation school for those over fourteen years old who wish to learn to read, write and figure for practical benefit as well as to live better and more satisfying lives. While stress is placed on the three Rs, the entire work is organized around the problems of making better citizens. The curriculum has expanded through the eleven years and now embraces all those subjects under the seventh grade that contribute most to the general 'livableness of life' and the training for home and community."

Because of its broad purpose and wholesome, stimulating effect on students, the Opportunity School has risen during recent years to a high place in public interest and has received the active support of citizens all over the state. The State Department of Education organizes and supervises the school, secures housing accommodations, and furnishes the staff of instructors. It is necessary, however, to invite local organizations and citizens to help locate students who should attend and to provide or secure scholarships for those who are unable to attend unassisted. These scholarships amount to twenty dollars which cover the entire expenses, excepting transportation, of a student during a period of four weeks. There has always been generous response to requests for cooperation and financial assistance.

Reasons for the Experimental Study

During the ten years following its organization in 1921, the Opportunity School grew rapidly in numbers and in the breadth and quality of the instruction given. By 1930, it was recognized by the members of the State Department of Education as one of the most important agencies of adult elementary education in the state. Convincing evidence of its wholesome, stimulating effect on young men and women had come repeatedly from mill owners, land owners, and others for whom students had worked both before and after attending the school. Practically every young person and adult who had come under its influence had spoken in highest terms of the personal and social values derived from the school. It seemed obvious, therefore, that the opportunities provided by the school should be continued and possibly extended. Before such steps were taken, however, it seemed advisable to make a critical study and evaluation of the work accomplished by the school.

There were other more specific reasons why an intensive study was desirable. As the Opportunity School had grown in numbers and in

the scope of its activities certain practical questions had presented themselves repeatedly. For example, what is the educational status of students who enroll, as measured by objective tests? What is the amount of progress made by different types of students in the various fundamental subjects during a term of four weeks or more? What types of students with respect to mental capacity and educational achievement profit most from the academic training provided? From what types of training do those of meager native endowment and of limited educational achievement profit most? What changes, if any, in the types of students admitted and in the kinds of training provided might be made to advantage? In addition, several problems which were somewhat more theoretical in character but which had very practical implications had often been considered. For example, what are the relative merits of various methods of intelligence testing in the case of illiterate or near-illiterate adults who enroll in the school? What are the merits of different bases of classification for purposes of instruction during an opportunity school term? What is the relation between individual progress and such items as age, sex, intelligence, and educational status? It was believed that any study which secured the answers to such questions would be of great value not only to the State Department of Education in organizing and improving the work of the Opportunity School in South Carolina, but also to other groups who might wish to establish similar schools elsewhere.

Accordingly, steps were taken during the latter part of 1930 to organize the next session of the school on an experimental basis. Unfortunately, funds were not available through the usual channels to organize and conduct an experimental study satisfactorily. An application was filed, therefore, with the American Association for Adult Education for a subsidy of five thousand dollars. The request was favorably considered and the funds were granted by the Carnegie Corporation of New York. As stated in the Preface, this sum provided one hundred scholarships of twenty dollars each and a thousand dollars each for the services of a competent psychologist and expert in tests and measurements, for instructional and test materials, and for expenses incurred in connection with the supervision of the experiment as a whole. As soon as funds had been assured, a committee composed of the three authors of this report was appointed to organize and carry on the study.

Purpose and Scope

The chief aims of the experiment, as outlined by the committee, were to study critically and objectively the progress of adults of limited education when favorable conditions for learning are provided and to consider the advantages and limitations of the instruction given for students of different levels of capacity and achievement. Favorable conditions for learning as defined in this investigation include opportunity to study for four weeks in an institution where the material needs of life are provided, a stimulating environment created, and efficient instruction given. Three levels of adult education were selected for study, namely, the initial stage in which specific effort is made to attain functioning literacy,[1] the early literate period in which common needs predominate, and the later stage in which specialized curriculums are essential. Owing to the large amount of time and energy required in carrying on the study at the lower levels, very little attention could be given to the third period other than to study the achievements of the students at the time of enrollment and to measure the progress made during the term.

In order to carry out the major purpose of this study a series of more specific aims was adopted. They may be described as follows:

1. To determine the social, economic and educational status of the students at the time of enrollment.
2. To measure the probable learning capacity of each student. In this connection a study was made of the relative merits of several methods of measuring the intelligence of opportunity school students.
3. To classify the students into more or less homogeneous classes in order that instruction might be adapted to their needs. Both group and individual guidance was provided for each group.
4. To determine the progress and difficulties of students during the term in the fundamental subjects taught, namely, reading, arithmetic, handwriting, and spelling.
5. To study the relation between individual progress and such items as age, sex, and intelligence.
6. To study the changes in the attitudes and habits of students through various informal types of training given in the dining room, during recreation periods, and in connection with auditorium programs, special lectures, concerts, and religious services.

[1] William S. Gray, *Manual for Teachers of Adult Illiterates*, National Advisory Committee on Illiteracy, Bulletin No. 2, October, 1930.

7. To analyze the data secured and other items of information available in order to determine desirable expansions and modifications in the curriculum of the school so that the various types of students who should be admitted may profit to the maximum in the future.

As will be pointed out later, it was impossible to carry out each of these aims fully.

Number and Selection of Students

The study as originally planned was to include approximately fifty white adults who had made little or no progress toward literacy, a corresponding number of colored illiterate adults, and about one hundred seventy-five white adults who had had previous schooling and were at various levels of advancement. The selection of the illiterate students was a matter of great importance. Eligibility was determined on the following bases: little or no schooling, good health, good moral character, a desire to learn, and perseverance. From among those recommended fifty white students and fifty colored students were selected representing the state as a whole and including various levels of intelligence and different ages varying from fourteen to seventy. The scholarships made available through the Carnegie subsidy were granted to these students. The more advanced students included many who had attended previous sessions of the school; some who were induced to go to the school by friends, alumni, and former teachers; and others who were sent by employers. These students either paid their tuition of twenty dollars or came on a scholarship provided by a friend or an organization. The specific steps taken in enlisting the interest of adults in attending the school and in selecting those who were admitted are described at length in Chapter II.

Location of the Schools

The Opportunity School for the white adults was held at Clemson State Agricultural College, Calhoun, South Carolina, between July 23 and August 22, 1931. In all there were two hundred thirty-three students, including fifty Carnegie scholarship students, most of whom had not attained functioning literacy, and one hundred eighty-three students who paid their tuitions or received scholarships from friends or local organizations. With the exception of eight, all of the latter group had attained literacy and were prepared for work at the fourth or fifth levels of adult elementary education referred to earlier. The

fifty Carnegie scholarship students and the eight just designated will be referred to in subsequent sections of this report as the Carnegie experimental group. The remaining one hundred seventy-five students were organized into two groups on the basis of achievement and will be referred to later as the Clemson intermediate group and the Clemson advanced group.

The Opportunity School for colored students was held at Seneca Junior College, Seneca, South Carolina. The opening and closing dates of this school were the same as those for Clemson College. The two institutions were located only nine miles apart, which facilitated close supervision. Fifty-five students were admitted, many of whom were unable to read with any degree of independence. These students will be known as the Seneca experimental group.

Testing and Classification of Students

Much information concerning the social and economic background of students and their school history was secured prior to and at the time of registration. Furthermore, an elaborate program of testing was carried on during the first two days of the term to determine their probable mental capacity and educational achievement. The steps taken, the tests used, and the resulting classification are described in Chapter III. Frequent tests were also given during the course of the term to determine the progress and specific needs of students and desirable changes in their classification from time to time.

The Curriculum

Many types of very valuable instruction could have been given during the term. But in order to study carefully the progress and difficulties of illiterate and near-illiterate adult students in the so-called fundamental school subjects, formal instruction for the two experimental groups was limited largely to reading, arithmetic, writing and spelling. Daily work in citizenship or problems of adjustment was also provided. *The Manual for Teachers of Adult Illiterates* was used as a guide in teaching the various groups which had not attained literacy. The program of studies for the Clemson intermediate group also included reading, writing, spelling, and arithmetic, and in addition, history and civics. All students belonging to this group took the same subjects but pursued them at different levels of advancement, according to their achievements and needs. A wide selection of

courses was offered to students in the Clemson advanced group. Each student selected a program of courses dictated largely by his own interests and needs. The nature and scope of the offerings at each of the five levels are described at length in Chapter IV.

Supplementing the formal instruction was an elaborate program of informal training of great value to all students. This training was given during meal periods, at the recreation periods, during the chapel hour, at vesper services, and during the motion picture or lecture hours. The nature, scope, and value of these activities are described in Chapter V.

The Final Tests

During the last two days of the term tests similar to those used at the beginning of the experiment were repeated. The data secured served two very valuable purposes. First, they enabled the investigators to determine the amount and character of the progress made in the various subjects taught. The findings appear in Chapter VI. Second, they made possible a series of statistical studies concerning the relationship between progress and various factors such as age, race, and achievement. The methods employed in making these studies and the conclusions reached are presented in Chapter VII. Final conclusions and recommendations for the study as a whole are presented in Chapter VIII.

Faculty

The faculty of each school was made up of the administrative and supervisory officers, a carefully selected group of paid teachers who had had wide experience in teaching adults of limited education, and a devoted group of volunteer workers. The faculty of the Clemson Opportunity School follows:

ADMINISTRATIVE AND SUPERVISORY OFFICERS

Mr. J. H. Hope, State Superintendent of Education
Miss Wil Lou Gray, Supervisor of Adult Schools
Dr. William S. Gray, Chicago University, Director
Dr. J. W. Tilton, Yale University, Psychologist
Miss Erin Kohn, Dean
Mr. Jesse Agnew, Director of the boys
Mrs. W. P. Pollock, Director of the girls
Miss Alys Newnham, Secretary

CARNEGIE EXPERIMENTAL GROUP TEACHERS

Miss Julia Gaillard
Mrs. Rose Goodwin
Miss Madge Harris
Miss Hattie Lever
Mrs. Laura Rhea
Mrs. J. W. Tilton

GRADE TEACHERS

Miss Sara Black
Mrs. Arney Childs
Mrs. Giles Fleming
Mrs. Alfred Gaillard
Miss Lesie Moore
Miss Edna Parham
Mrs. Grady Stroud
Mrs. Walter Suber
Miss Callie Thomas

SPECIAL TEACHERS

Mr. John Williams, Textile Arithmetic
Prof. Robert Lee, Stringed Instruments
Mrs. Robert Lee, Piano
Miss Lemuel Sarratt, Choral Director
Col. F. L. Munson, Physical Education
Prof. J. L. Marshall, Manual Training
Miss Emily Dantzler, Home Economics
Miss Marie Fair, Home Economics
Mr. William Crawford, Athletics
Mrs. Haskell Dial, Dietitian
Mr. J. G. Lindsay, Steward

VOLUNTEER WORKERS

Miss Sylvania McCreary, Helping teacher
Miss Laurie Gray, Librarian
Miss Margaret Reid, Director of Play
Miss Florrie Lee Lawton, Vesper Leader
Dr. D. W. Daniel, Lecturer
Mr. P. B. Holtzendorf, Y.M.C.A. Secretary
Mr. Shepherd, Manual training assistant
Mrs. Elsie Farwell, Visiting teacher from Newfoundland

The faculty of the Seneca Opportunity School included the following:

ADMINISTRATIVE AND SUPERVISORY OFFICERS

Mr. J. H. Hope, State Superintendent of Education
Miss Wil Lou Gray, Supervisor of Adult Schools
Dr. William S. Gray, Chicago University, Director
Dr. J. W. Tilton, Yale University, Psychologist
Mrs. T. D. Watkins, Supervisor
Mr. Clarence Beeks, Director of the boys
Mrs. J. D. Bryan, Housekeeper

GRADE TEACHERS

Miss Rosamond Alston
Mrs. Abbie Chappell
Mrs. Minnie Gandy
Miss Helen Hagood
Mrs. Louise Perrin

II

The Nature and Selection of the Students

The purpose of this chapter is to describe the nature and selection of the students who participated in the experiment. As indicated in Chapter I, three groups of white students were enrolled at Clemson College, namely, an experimental group composed of students who had not attained functioning literacy; an intermediate group composed of those who were literate but of meager education; and an advanced group whose interests and needs differed more or less widely. In addition fifty-five colored students, most of whom had not attained functioning literacy, were enrolled at Seneca Junior College. In discussing the nature and selection of these students, the following points will be considered: the steps taken in enlisting interest and cooperation; the nature of the information secured; the methods of selection used; the general character and distribution of the students selected; and their economic, social and educational status.

Enlisting Interest and Cooperation

One of the first steps essential in organizing the experiment was to enlist the interest and secure the attendance of the various types of students needed. Experience in organizing previous sessions of the school had shown clearly that the problems involved in securing the attendance of students differed with adults at different levels of educational achievement. For example, illiterate adults are often shy and are not easily persuaded to attend, many who should come live in isolated sections of the state and cannot be reached easily by recruiters, and some who would like to attend cannot be spared from home unless special arrangements are made. Many literate adults, on the other hand, are eager to continue their education. However, they often lack the necessary funds or hesitate to ask for release from employment for a period of time. Other adults of limited education do not fully recognize the value of additional training and need the advice or encouragement of a friend or an employer in reaching a decision.

As such facts were considered, it became obvious that a vigorous publicity campaign was essential in order to insure a sufficient number of desirable students of each type needed, particularly those who had had very little or no previous schooling. Because of the diverse interests and conditions represented, various methods were necessary in enlisting interest and securing attendance. Furthermore, definite steps were desirable in order to secure the cooperation of educated citizens and organizations in recruiting students and in providing financial assistance when needed. The publicity campaign which was organized, therefore, was directed in part to the general public and in part to potential students. The more important agencies and methods used will be described briefly.

With the confirmation of financial help from the Carnegie Corporation a signed article was sent by the State Supervisor of Adult Education to the daily and country papers. This article was in reality an invitation to educated citizens, such as teachers, pastors, and employers, to recommend with care desirable students, both white and colored, for the Carnegie scholarships which were limited to those who had not attained functioning literacy. The substance of the article follows:

> For a number of years it has been the policy of certain foundations to give scholarships and fellowships to college students who have distinguished themselves or shown marked ability. It has remained for the American Association for Adult Education to make a unique grant of $2,000 to the South Carolina Department of Education to be used for one hundred scholarships for persons who have not learned to read and write well.
>
> The American Association for Adult Education became interested in the Opportunity School because of its service to adult illiterates and to others of limited education. This Association proposes to finance and direct, in conjunction with local and state authorities, a scientific study to determine the ability of illiterate adults to learn when favorable conditions are provided. Such conditions include the opportunity to study for several weeks in an institution where all material needs are met, where a stimulating environment is furnished, and where efficient instruction is given. The results of the proposed study will enable the directors to study minutely the problems and difficulties that arise in teaching illiterates and near-illiterates.
>
> South Carolina is peculiarly fortunate in having been chosen for this study. It is the plan of those in charge to give one hundred scholarships, fifty to white adults and fifty to colored adults, which will cover all expenses except transportation. Since the adults to whom these scholarships will be given cannot read, I am asking employers, neighbors, friends, relatives, ministers, teachers, and anyone else interested to send to me for application blanks on which to recommend prospective pupils. The only requirements for admission are: strong bodies, good moral character, a desire to learn, the ability to

see a thing through, and no previous schooling or practically none. The field for this experiment is the entire state, and we would like for every county to be represented in this experiment. Representation, however, will depend upon responses made to this request. There should be no dearth of recommendations, for there are hundreds in South Carolina who need the training and whose interest can be stimulated provided a friendly hand is extended to them.

We believe that here is an opportunity for service which employers in particular can render, not only to their employees, but also to themselves and their communities, and we hope their response will be prompt and state wide. During the ten years the Opportunity School has ministered to the undereducated, 1,564 students have been enrolled. With few exceptions, 1,564 students have returned to their respective homes better citizens and with a finer sense of personal obligation both to their families and to society. These results could not have been secured without the assistance of hundreds of kindly people throughout the state. If you can recommend worthy applicants, the Department of Education will be grateful.

Supplementing the public press were three Clemson College editions of the Opportunity Outlook, the school's mimeographed newspaper. Copies of the papers were sent to two hundred alumni members, to three hundred prospective students who had been recommended by night-school teachers, and to seventy-five leaders interested in the movement. These papers gave intimate glimpses of life at Clemson, brief sketches of its history, and emphasized the educational and recreative value of a month on the campus.

A second, and probably the most effective, means of informing and interesting the public in general and individuals in particular were circular letters sent to the following key people: forty-six county superintendents; twelve county organizers; forty-six county demonstration agents; forty-six county agricultural agents; twenty-five health nurses; twenty-five tuberculosis association nurses; twenty captains of the National Guard; ninety-eight presidents of the American Legion Auxiliary Units; eighty-five mill executives; seventy-five citizens who were asked to become Big Brothers and Big Sisters to seventy-five less fortunate persons; the Director of Extension Service at Clemson College; the State Home Demonstration Agent at Winthrop College; two hundred night-school teachers; and two hundred selected former pupils. Furthermore, the Executive Secretary of the South Carolina Tuberculosis Association, the Director of Extension Service, the State Home Demonstration Agent, the State President of the American Legion Auxiliary, the Adjutant-General, and the State Supervisor of Nurses sent letters to their local workers urging them to recommend students for the Carnegie Scholarships.

Various types of personal and circular letters were mailed to different groups of people in an effort to enlist their interest and cooperation. The mimeographed circulars that are reproduced on pages 23 and 24 illustrate the general character of the information supplied and the appeals made.

Today I am writing some outstanding men and women hoping to interest them in the Clemson Opportunity School. With financial conditions as they are I have pondered long over how best to secure the attention of those who might help the Department make our school even more successful than formerly. If South Carolina is ever to move forward as a whole, our slogan will have to be : "The educated to the rescue of the uneducated." For this reason I appeal to you!

LIFE'S INEQUALITIES: Haven't you often thought of the inequalities of life and wondered why you had so much while others had so little? I know you have, and at the same time wished you might do something for the less fortunate. Our Opportunity School pupils come from two kinds of homes. The first is clean and bare. The inmates are standing in the doorways begging for the things they have heard about but never possessed. Some are kept there by ignorant, selfish parents, or by families for whom they are in no way responsible. The second kind of home is dirty and cluttered with nothing. The inmates stand with their hands hanging at their sides, for they know no desire and have neither grasp nor reach. They do not even know they have been left behind in the race of life. They remain passive. Family history repeats the same story of illiteracy, citizen-liability, and non-consuming, non-producing plodders economically.

OPPORTUNITY UNLIMITED: It is to these two groups that the Opportunity School offers training and advancement. Neither group is able to help itself financially, so the more fortunate must come to the rescue of those who would rise but cannot, and those who are sleeping the sleep of the illiterate with none to rouse them from their lethargy. If life is ever to be more than a burden to these and they are to become state assets instead of liabilities, the educated will have to take them by the hand and lead them into the light! Please read the enclosed folder and see what we are trying to do. If, after reading, you wish to give a scholarship, or more, or less; or to locate pupils; or, help them to get to Clemson, rest assured any assistence whatsoever, will be most gratefully received. A line will bring you any further information. Trusting to hear from you, I am,

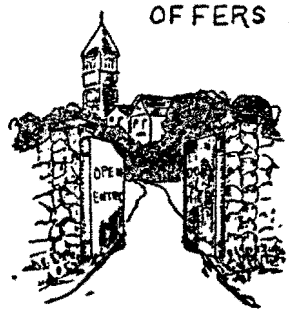
Yours very sincerely,

Columbia
June 10, 1931

Supervisor of Adult Schools

The circular letters which were sent out served as trail blazers. Shortly after they had been mailed the State Supervisor of Adult Education visited seventeen counties where she made talks at night schools, held committee meetings, and appointed key people to be responsible for interesting, recommending, and sending students to the

CLEMSON OPPORTUNITY SCHOOL
OFFERS A HIGHWAY



To every man there openeth,
A Way, and Ways, and a Way,
And the high soul climbs the
highway,
And the low soul gropes the low,
And, in between, on the misty
flats,
The rest drift to and fro;
But to every man there openeth,
A high Way and a Low,
And every man decideth
The way his soul shall go.

CLEMSON OPPORTUNITY SCHOOL
July 23 to Aug. 22.

WHAT — A college vacation summer school for workers over fourteen and under seventh grade in attainments. More than 1,564 pupils have attended in the ten years since the school was started.

STUDIES — The regulation courses given in all other elementary schools, with special courses designed to make adults happier personally, better homemakers, more intelligent citizens, and more sympathetic neighbors.

PUPILS — Those who have strong bodies, good minds, and clean morals, and are ambitious and cooperative and wish all around improvement may attend the Opportunity School.

COST — $20.00 pays every thing, except transportation, for the entire time at Clemson. This includes room, board, laundry, books, school supplies, and all fees.

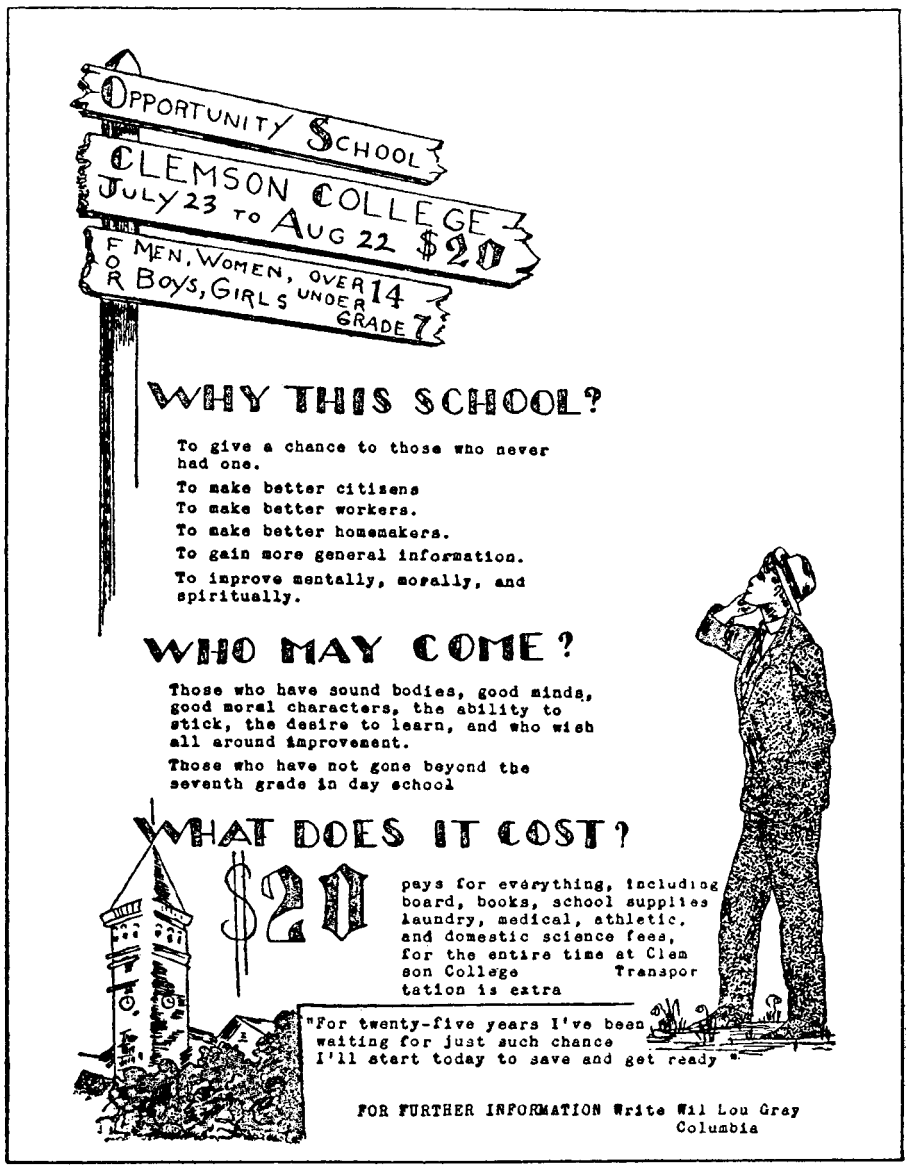
WANTED — Employers, Patriots, Christians and other Friends to find persons who need and wish to come. Encourage them to do so by helping them get ready and by securing scholarships when they are not able to come unassisted.

SENTENCES FROM TWO PUPILS LETTERS

"It has been worth a life time of living to me and my family for me to go to the Opportunity School."

"I have been promoted three times since starting to night and the Opportunity School. I was making $16.00, now I make $29.05."

schools. In addition she attended four alumni meetings at which six hundred twelve former students and their friends were present. The local workers who served as recruiting agents and later aided the students in getting to Clemson and Seneca included several distinct groups: two hundred white and colored night-school teachers who



recommended two hundred fifty adults, of whom sixty attended, mill officials and their social workers, county workers, former pupils, chairmen of the Americanism Committees of the American Legion Auxiliary, and other citizens. In making contacts with prospective students and in stimulating their interest in attending the Opportunity School, mimeographed circulars similar to those on pages 25 and 26 were used.

OPPORTUNITY SCHOOL FOR NEGROES

SENECA INSTITUTE JULY 23–AUG 22

WHAT The American Association for Adult Education has given the State Department of Education money to finance scholarships for an OPPORTUNITY SCHOOL for NEGROES.

WHERE Seneca, at the Seneca Institute, July 23 to August 22, 1931. This boarding school has been lent to the Department by the Baptist denomination of that section.

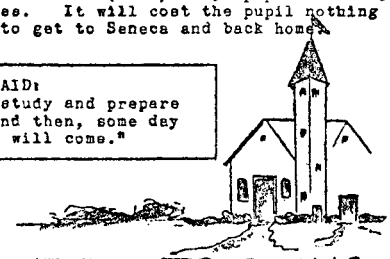
PURPOSE To teach people to read and write in one month.

WHY
To make better citizens.
To make better workers.
To make better homes.
To make improvement mentally, morally, and spiritually.

PUPILS Those may come who have little or no schooling, good bodies, good moral character, a desire to learn, and the ability to stay the month out.

SCHOLARSHIPS SCHOLARSHIPS will be GIVEN (FREE) to 50 pupils who furnish the best references. It will cost the pupil nothing except the money to get to Seneca and back home.

LINCOLN SAID:
"I will study and prepare myself, and then, some day my chance will come."



WHAT PUPILS NEED TO BRING

One pillow Three sheets Towels Soap Toothbrush

Three suits of underclothes Pillow Cases A quilt or cover Comb

Plain clothes for school wear or overalls

Other clothes for church wear if they wish to bring them

Any musical instrument that any one can play.

The State Supervisor of Nurses saw in the Seneca school an unusual opportunity for colored midwives to attain literacy. She, therefore, asked if she might nominate a number of illiterate and near-illiterate midwives throughout the state who, because of their great need and willingness to be taught, would make very promising students. Twenty of these women responded, but only sixteen were able to accept the offer on account of transportation charges. The President of the Seneca Junior College and the school physician who was also a trustee recommended and sent fifteen students. The remainder of the Seneca student body were recommended by white and colored county workers who also assisted in securing transportation.

The cooperation received from public-spirited citizens and organizations in enlisting the interest of prospective students far exceeded expectations. They also contributed generously to the financial support of the school. To be specific, one hundred thirty-eight scholarships were given by organizations and textile plants. The American Legion Auxiliary gave seventy scholarships and the president of a chain of mills gave twenty-four. In addition to the scholarships, these mills also gave house rent, lights and water to any head of a family in their employ who attended the school. If there were children under fourteen, five dollars each was added. Another policy practiced by many mill authorities was to offer a half-scholarship to all who wished to attend, to lend them money when necessary, and to keep their positions open for them during the month. Groceries worth five hundred dollars were given by wholesale firms through the solicitation of the steward of Clemson College. Many students needed not only financial aid, but also clothing, food for their families while they were away, and transportation for themselves. These types of assistance were given by civic and religious organizations, employers, and individuals. Personal gifts ranged from pennies to hundreds of dollars, from a pair of shoes to a box of clothing valued at one hundred fifty dollars, from a visit to the home of a prospective student to driving twelve hundred miles in order to take students to Clemson College and to bring them home.

Methods of Selecting Students

The recruiting agents were largely responsible for the initial selection and nomination of students. When adults who were not personally known to the recruiting agents were suggested to them, they

made inquiry of someone who knew them, often an employer, concerning their character and ambition. If the report was favorable, the potential student was informed about the school and asked if he would like to go. If he showed real interest, his name was sent with a brief description of his qualifications to the State Supervisor who in turn sent him one of several letters of invitation which in her judgment best fitted the case. To meet this need five illustrated, mimeographed form letters were prepared: two to illiterates and near-illiterates, one for white and one for colored; one for Carnegie scholarship students; one for the students in the intermediate and advanced groups; and one for former pupils. Sample paragraphs from these letters follow:

A

Your name has been suggested to us as a person who would make a good pupil for the Opportunity School. This letter is to assure you a warm welcome if you decide to join the happy band. . . . The school will be arranged in sections, each group having its own classroom. For instance, the beginners will be by themselves and the more advanced will be in their own classrooms. . . . If you are interested in coming to the Opportunity School, will you please fill out and return the enclosed blanks. Please do not wait long to return it for the number of scholarships is limited.

B

This is the first year we have been able to have an Opportunity School for colored students. The State Department of Education is more than glad to be able to give fifty worthy persons a chance of a lifetime. A month at the Seneca Opportunity School will be worth more than six months of night school. . . . You have been recommended. This is a great honor and I know you appreciate being named for a free scholarship. . . . You will not need many clothes or any fine clothes, but just enough to keep clean. Soap and water will also be free, so you can wash your underclothes at night and have them fresh every day just as the Clemson teachers and pupils will do. . . . If you play a musical instrument, bring it along.

C

Do you remember the friendly hand and cheerful voice that first influenced you to go to the Opportunity School? Would you ever have had the joy of walking the Opportunity way if some kind friend had not walked with you back home? Would your dream of going ever have come true if some generous person had not helped you in more ways than one? Think these things over, dear former pupil. COME BACK YOURSELF! BRING SOME ONE WITH YOU!

Enclosed in each letter of invitation was an Opportunity School folder which set forth important details relating to the school. Candidates for the Carnegie scholarships were also sent application blanks asking the following questions:

Name.....
Address.....
County.....
Age.....Married.....
If married, number of children Race
Months of schooling applicant has had
Can applicant write name? Read signs?
Is applicant self-supporting?
Does applicant assist in support of family? How many?

When the applicant returned the blank he accompanied it by a signed statement as follows:

I hereby certify that if I am given a scholarship I will do my best and stay to the end.
Signed.....

He also included a recommendation from two sponsors.

I certify that.....
is a man (woman) of good moral character, has good health, good habits, and is interested in self-improvement.

Signed 1
2

A questionnaire was sent to all other prospective and former students requesting the following information:

Opportunity School of South Carolina
Information Blank

Date.....

Name of applicant.....
Street Address.....Town.....
Is your father living?.....Is your mother living?.....
How many children in your father's family?.....
What is your age?.....What is your church?.....
How much schooling have you had?.....
At what age did you begin to work for pay?.....
Are you married?.....If married, how many children.....
Do you assist in supporting any one?.....How many?.....
What is your work?.....Weekly salary?.....
*Are you able to pay your own way?.....
Give names of two persons who would recommend you
Teacher } or
Minister }

.....
Name Address
Business man .....
Name Address

* If you are unable to pay your way, or if you can pay only part, and you wish to borrow the money to pay your way, we have a small loan fund furnished by the Carolina Insurance Company. We will be glad to take this matter up with you.

REMARKS:

The applications which were returned were filed first according to counties in order to insure a state-wide distribution, if possible. Later they were rearranged according to grades in school in order to award Carnegie scholarships to those with the least amount of schooling. When a county had been allotted its full quota—one white and one colored—or when applicants for scholarships belonged in the intermediate or advanced group an effort was made to secure scholarships from other sources or to lend pupils the necessary amount. Such steps were taken only when home conditions made it impossible for students to borrow or to meet their own expenses in some other way. Owing to the large number of agencies through which publicity was given the demand for scholarships exceeded the supply, except from so-called "pure illiterates." It is estimated that about two hundred applied for scholarships through recruiting agents or directly through the supervisor's office.

It was planned at first that all questionnaires and applications should be sent to the supervisor's office. However, due to financial uncertainties and fluctuating demands at the mills, applicants could not make definite plans very far in advance. It was decided, therefore, to have the applications in the five largest centers filed with the local organizers. These applications were examined by the supervisor on her second visit to each center and the scholarship assignments made. Scholarships reserved for counties which made no application were awarded to these five centers where the demand was greatest.

Naming the recipients of the Carnegie scholarships was very difficult because of the merits of many of the claims presented. A study of the applications revealed three chief reasons for little or no previous schooling. The first was the neglect of parents to send their children to school; the second was the parents' real or fancied need for the children's earnings; and the third was the fact that the schools were long distances from homes or were taught by unsympathetic teachers. Notwithstanding the care observed by recruiting agents in recommending students, awards had to be made somewhat tentatively until the educational achievement of students could be determined at the Opportunity School. Sixty white students came on this basis. After the tests had been given fifty-eight were placed in the experimental group. Fifty were awarded Carnegie scholarships while the others were given scholarships from other sources. Because the living ex-

penses of the negroes were not so high as that of the whites, sixty-two students were permitted to register. Fifty-five remained through the entire month. The additional fact should be pointed out that in order to have various intelligence levels represented among the illiterate groups, one of the qualifications for admission to the Opportunity School during previous years was disregarded, namely, "a good mind." The adoption of this policy resulted in admitting a lower cross-section of Carolina's illiterates than usual.

Geographical Distribution of Students

When the study was first outlined, it seemed advisable to select the scholarship students in such a way that they would be truly representative of the illiterate and near-illiterate adult population of the state. Various efforts were made to secure data which could be used in making selections on various bases such as geographical distribution, age, sex, etc. On account of the brief period available for such work and the difficulty in securing the types of information needed the plan had to be abandoned. However, effort was made to secure representatives from each county of the state, as explained in the previous section.

South Carolina is divided into three general geographic regions, namely, the Piedmont, the Sand Hills, and the Coastal Plains, and into forty-six counties. Although Clemson College and Seneca Junior College are located in the extreme Northwestern corner of the state, thirty counties and all three geographical areas were represented. However, a large majority of the students, two hundred nineteen, came from six nearby counties. Of this number, one hundred seventy-four were white and forty-five were colored. The Clemson student body came from forty-one towns and twenty-four rural communities in twenty-nine counties. The students in the Clemson experimental group came from eighteen counties of South Carolina. One student came from North Carolina. The Seneca student body, all of whom received Carnegie scholarships, came from twelve towns and ten rural communities in nine counties. Thirty of them came from the county in which the school was located. On account of the special effort made to secure illiterates, thirty of the white and twenty-nine of the colored students came from rural communities where the illiterates predominate. This was the largest number of rural pupils ever enrolled in the Opportunity School. It should be added here that of the two hundred eighty-eight students enrolled in both schools, two hundred sixty-two

came from the seventeen counties visited personally by the State Supervisor and where the best recruiting committees were organized.

Economic, Social and Educational Status

The two hundred thirty-three students who enrolled at Clemson College were all of pure Anglo-Saxon descent. A general impression of the physical appearance of the group may be secured from the photographs reproduced opposite this page and opposite page 11. A brief account of the more recent history of the group represented may be pertinent. Before 1890 there were few mills in South Carolina. The people now in mill villages were then in the rural sections of this and adjoining states. These families were driven from their country and mountain surroundings—often their own lands—because cotton, their chief source of revenue, sold for less than the cost of production. The complete change of occupation and outlook on life which now occurred had a numbing effect, particularly on the older generation, and resulted in loss of morale. Because of indifferent educational leadership there were no labor restrictions in the early days of the cotton mill industry. For twenty years there was little concerted action on the part of mill managers against child labor and in favor of education and recreation. The older members of the Opportunity School group were among those who suffered most from this neglect. The last fifteen or twenty years, however, have brought marvelous changes in many respects. As the textile industry prospered financially, managers began to give attention to the needs of their operatives. This change in attitude on the part of industry together with new educational leadership brought about the enactment of child labor laws and, to a limited extent, compulsory school attendance. The younger members of the Opportunity School group reflected these changes for the better and exhibited a return of ancestral morale.

The fifty-five colored students at Seneca Junior College included a carefully selected group. The photograph which is reproduced opposite page 34 shows that they were relatively mature. Unfortunately, many of them were seriously handicapped at the beginning of the term by eyestrain or poorly adjusted glasses.

Information relative to the parental, educational and economic status of the four groups of students in the two institutions was secured at the time of registration. The statistical data were summarized and are presented in Table I for two hundred thirty-three

A Selected Group of Students of the Clemson Opportunity School, August, 1931

TABLE I. DATA RELATING TO PARENTS, CHURCH AFFILIATIONS, PREVIOUS SCHOOLING, MARITAL STATUS, TYPES OF WORK AND SALARY OF THE OPPORTUNITY SCHOOL STUDENTS

	Experimental Groups		Clemson Opportunity School	
	Clemson	Seneca	Intermediate	Advanced
Number of pupils	58	55	72	103
Range in age	15–70	15–64	14–45	15–34
Average age	25	38	20	20
Parents:				
No. both living	27	9	53	79
No. fathers dead	27	33	14	16
No. mothers dead	19	39	10	12
No. both dead	15	25	4	6
Average no. of children in family	8	8	8	6
Church affiliations:				
Baptist	27	35	44	56
Methodist	13	9	6	18
Presbyterian	1	2	3	1
Lutheran	0	0	0	1
Church of God	0	1	1	2
Holiness et al.	1	2	3	7
None	13	6	15	18
Previous schooling:				
Months attended	17	7	41	63
School grade last attended	2	2	5	7
Average age on leaving school	13	13	14	14
Marital status:				
Married	21	37	8	7
Total no. of children	54	110	22	11
Type of work:				
Textile worker	36	0	45	88
Farmer	15	27	12	4
Homemaker	2	2	3	6
Midwife	0	16	0	0
Laundress	0	5	0	0
Cook	0	3	0	0
Road worker	0	2	0	0
Mechanic	1	0	0	0
Other occupations	1	0	12	5
Weekly salary:				
No. reporting salary	35	18	47	89
Lowest salary reported	$4.48	$1.50	$4.52	$4.92
Highest salary reported	15.36	14.20	22.50	17.96
Average of salaries reported	9.04	5.77	11.18	10.38
*Total loss (weekly)	316.40	103.86	525.46	923.82

* The total salary sacrificed by the students while attending school amounted to $7,945 for the Clemson group and approximately $467.37 for the Seneca group. This includes only the loss reported in weekly salaries.

white students and fifty-five colored students. A summary of the entries in the table relative to the Clemson Experimental group reveals some very interesting and significant facts. The average age of the group was 25, the average amount of schooling was 17 months, the average age on leaving school was 13, and the grade last attended was the second. The chief reason given for quitting school was a real or imaginary need for earning their own living and assisting in the support of the family. One out of every four of the group was an orphan. The average number of children in the family was 8 of whom 2 were deceased. More than one-third of the group were married with an average of more than two children per family. Approximately one-half of the group were Baptists and about one-fourth were non-church members. Two-thirds of the group were textile workers and the avergae salary earned by those reporting salaries was $9.04 a week.

The remaining groups can be contrasted briefly with the Clemson experimental group. The Seneca experimental students were much older (average age, 38), were predominantly Baptists (seven-elevenths of the group), the average amount of schooling was much less (seven months), over one-half of them were married with an average of 3 children per family, over half of them were farmers, and the average wage of those reporting salaries was $1.50 a week plus board. The Clemson intermediate students were much younger (average age, 20) than the experimental group, had attended school much longer (41 months), had left school at a much more advanced grade (fifth grade), and far fewer of them had married. The Clemson advanced group differed from the intermediate group in only a few significant respects: they came from somewhat smaller families (6 rather than 8 children), had attended school longer (63 months rather than 41), had left school at a higher grade (the seventh rather than the fifth), and were more predominantly textile workers.

The foregoing analysis and comparisons indicate that there are striking differences in the educational qualifications of the four groups of students as reported on the information blanks submitted. In the chapter that follows, actual differences in their educational achievement will be considered.

THE STUDENTS OF THE SENECA OPPORTUNITY SCHOOL, AUGUST, 1931

III

Initial Testing Program and Classification of Students

This chapter describes the initial testing program, the reliability of the test measures, the classification of the students, the grade location of the different groups, and their mental ages.

General Nature of the Testing Program

A testing program was organized to serve three purposes: (1) to supplement the descriptions of the student groups presented in the previous chapter, by providing objective evidence of the capacity and educational status of each group, (2) to furnish a more accurate basis of classification than the registration cards provided, and (3) to give initial scores with which to compare final scores for the computation of gains or progress.

The aims and scope of the experiment determined the use of tests in reading, writing, arithmetic, spelling, and general information. Specific tests were chosen as a result of studies of their validity and reliability, and their possible use in diagnosis. Tests were repeated in so far as was possible for four reasons: (1) to afford the group a chance to become accustomed to the tests, (2) to afford a basis for computation of practice effect, (3) to increase reliability, and (4) to afford a basis for the computation of reliability.

Administration of the Tests

The white students at Clemson College were divided into two groups for testing purposes on the basis of a short interview following their registration on Thursday, July 23. The aim of the interview was to find out whether or not each student could score on the Stanford Reading Test. The following directions were given to the teachers who did the interviewing:

Interview every white student in order to divide the whole group into two sub-groups for testing purposes on Friday. If the interviewers can learn incidentally any supplementary information about the student which will help in classification, so much the better; the only necessary step, however, is to find out into which of two testing groups to place him on Friday. This should be done as follows: Use a Stanford Reading Test for each student (do not mark it except as the student writes on it as directed below; it can then be used later without any erasing). Open it to the sample and (pointing to the directions) ask, "What does that say?" If the student reads the directions correctly, say "That's right, it says . . ." (repeating it), or if the student can't read say "It says . . ." (reading it). Then ask, "Where are the dotted lines? Show me a dotted line where a word is missing." "Show me another. That's good." "Now write in the word that is missing in this one" (pointing in the margin to the sample paragraph).

Say "Fine," if right. If you get no response or an incorrect one, find out if the paragraph has been read by asking "Who was throwing the ball?" "Who was trying to catch it?" "What word is missing?" If a student has not read well enough to answer these questions, especially the last, tell him the answers and stop. (He shouldn't take the Stanford Test. Write "Gates" on the student's card.) If he answers correctly tell him "That's right, write it on the dotted line." (Pause till done.) "Now do this one" (pointing in the margin to the next paragraph, the one immediately following the sample). If the student does that correctly without assistance, record on the student's card, "Stanford." If not, "Gates."

Those marked "Gates" will be measured in one group with one set of tests and those marked "Stanford" will be tested in another group with the "Stanford" Tests.

For those who, in the opinion of the interviewers, could not score on the Stanford Reading Test, the following testing program was carried out on Friday at Clemson College:

Between 8:30 and 10:30 A. M.

1. Compass Diagnostic Test in Arith., Test I, Addition of whole numbers.
2. Compass Diagnostic Test in Arith., Test II, Subtraction of whole numbers.
3. Gates Primary Reading Rest, Type I, Word recognition, Form I.
4. Gates Primary Reading Test, Type II, Word, phrase and sentence reading, Form I.
5. Gates Primary Reading Test, Type III, Reading of Directions, Form I.

Between 11:30 and 12:30

1. Pintner Non-language Mental Test.
2. Myers Mental Measure, Form II.

Between 2:00 and 4:00

A repetition of the 8:30 to 10:30 program.

Between 4:30 and 5:30

Morrison McCall Spelling Scale, Lists 1 and 2.

At Seneca Junior College a similar program was followed except that the 11:30 to 12:30 and the 4:30 to 5:30 parts of the program were reversed. Dr. J. W. Tilton gave the intelligence tests and Mrs. Tilton gave the spelling tests to both groups. Dr. Tilton administered the morning tests at Clemson and the afternoon tests at Seneca. Mrs. Tilton administered the morning tests at Seneca and the afternoon tests at Clemson.

To the white students who had demonstrated their capacity to read to the interviewers, the New Stanford Reading Test, Form V was administered at 8:30 by Mrs. Arney Childs. The reading test was followed immediately by the New Stanford Arithmetic Test, Form V.

As soon as the reading test was completed, a group of scorers under the direction of Mrs. Rose Goodwin concentrated their efforts upon the scoring. By noon the reading test was scored. On the basis of the reading scores made in the morning, the group was divided for the afternoon tests. To those whose reading grade was 4.0 or over, Mrs. Childs administered the New Stanford Achievement Test, Form V. The testing began at 2:00 and intermissions were provided as suggested after tests 2, 6, and 9.

The New Stanford Primary Achievement Test, Form V was administered by Mrs. Grady Stroud to those who scored below the fourth grade in the morning on the New Stanford Reading Test. Some students who took the Gates test in the morning made such high scores as to make it seem doubtful if they had been accurately tested. They were, therefore, assigned to Mrs. Stroud and given the New Stanford Primary Achievement Test. It may be said in passing that with few exceptions, the initial interview served its purpose very well.

On Saturday, Dr. William S. Gray and three assistants administered the Standardized Oral Reading Paragraphs to all students at Clemson and Seneca. An unstandardized oral reading test for adults was also given to those tested during the morning. Inasmuch as it did not prove as satisfactory as the standardized test, its use was discontinued. A general information test prepared by Miss Wil Lou Gray and Miss Erin Kohn was also administered to all students, and the Monroe Standardized Silent Reading Tests, Revised were administered to the white students whose reading achievement varied from the third to the eighth grade, inclusive.

The written spelling dictations were used as samples of the "usual quality" of handwriting and were scored through the use of the Thorndike Handwriting Scale.

Reliability of the Test Measures

Before discussing the grouping of the students for purposes of instruction on the basis of the test scores, it will be advisable to consider the reliability of the scores. The reliability coefficients shown in Table II were predicted by the use of the Brown-Spearman prophecy formula. In the case of intelligence, the Pintner Non-language Mental Test and the Myers Mental Measure were considered as two forms. In reading and arithmetic the same forms were used twice. With these exceptions the reliabilities reported above are based upon the use of two forms.

TABLE II. RELIABILITY OF THE MEASURES OBTAINED DURING THE INITIAL TESTING OF THE EXPERIMENTAL GROUPS

	Clemson Experimental Group		Seneca Experimental Group	
	Rel. Coef.	P. E. Score in months	Rel. Coef.	P. E. Score in months
Reading	.92	1.5	.97	1.1
Writing	.98	1.5	.99	1.1
Arithmetic	.90	1.9	.91	1.4
Spelling	.94	2.1	.98	1.1
RWAS Composite	.97	1.0	.99	.7
Information	.85	..	.76	..
Intelligence	.80	..	.82	..

The handwriting scores were derived from the two dictation spelling tests in the giving of which no mention was made of the quality of the writing. Neither teachers nor students knew that the writing was to be scored. Both samples were given scale values by two scorers with previous experience in scoring handwriting. The measure for which the reliability coefficient and P. E. (Probable Error) are given in Table II is, therefore, an average of four scorings of two samples. The coefficient was predicted from the correlation between the average value of the first sample and the average value of the second. The Thorndike scale was used because of the wide variety of styles of writing which were submitted. The scores were arbitrarily scaled down to zero for those who could not make a letter. A value of one was assigned to legible isolated letters. Values of 2, 3, or 4 (the last being the lowest Thorndike value) were assigned to connected letters re-

sembling words, according to whether few, half, or most of the letters were legible. These extension values were given equivalent grade locations by smoothing a curve from an assumed zero at 1.0 through the standards given on the scale for "usual quality."

Testing conditions in general were very good, except that the room and desks at Seneca were not so desirable as those at Clemson. The teachers and all others in charge were in hearty sympathy with the testing program, and their attitude was soon reflected in that of the student body. This was a more potent influence than can be realized by one who has not seen the Opportunity School in operation. Furthermore, about fifty-five of the students had attended and fifteen of the faculty had taught during one or more previous sessions of the Opportunity School. Both former students and faculty served as a leaven which spread its influence quickly throughout the group. In less than twenty-four hours it was evident to all that Miss Gray and her whole staff were in no sense hirelings. They were friends, doing all they could for the students regardless of how well or poorly they were paid in money or whether they were paid at all. This spirit of helpfulness and loyalty to friends accounted for the fact that there was practically no evidence of perfunctory participation in the tests and no evidence whatsoever of rebellious participation.

The high coefficients and low probable errors presented in Table II supply clear evidence of the reliability of the results of the initial testing program. The test scores may therefore be used with assurance that they are reasonably accurate measures of the knowledge and ability of the students in the particular fields tested at the beginning of the Opportunity School term.

The Classification of the Students

On Saturday, July 25, the students were classified into sections after the reading and intelligence tests had been scored. This responsibility was assumed by the directors and the teachers concerned. The students were first classified into groups of from twelve to twenty students on the basis of the silent reading scores. No effort was made to have the classes correspond to public school grades. Changes in the initial classification of individual students were made for various reasons. In some cases students were known to the teachers through night-school work or previous attendance at the Opportunity School and were graded up or down at their suggestion. If a student ranked

very high or low on an intelligence test he was put in a more or less advanced group. In certain instances where large frequencies permitted, rapid and slow sections were organized. As shown in Tables III and VII, sections three and four, eight and seven and ten and nine were pairs of bright and dull sections of approximately the same educational status. For some students, arithmetic scores were available when the classification was made. If there was a significant difference between the grade classification in reading and the grade classification in arithmetic a compromise was made. Likewise, compromises were made, especially in the lowest grades, if there were notable differences in the grade classification of students in oral reading and in silent reading.

Of the two hundred and eighty-eight students so placed, thirty-five were later shifted. The explanation for these changes was associated with arithmetic thirty times, with writing five times, and with spelling three times. With these exceptions, the teachers described the classification as satisfactory. It is natural that the transfers made were associated largely with excellence or difficulty in arithmetic, inasmuch as success or failure in that subject can be readily determined. As will be shown later, there were large discrepancies between ability in reading and arithmetic.

Table III shows the final results of the classification in terms of a composite RWAS (reading, writing, arithmetic, spelling) score, for the 253 students who remained for the final testing.[1] The average range for each class was 2.5 grades. This approximates the usual conditions in public schools. In other words, the adult students were about as closely (or loosely) graded within the nineteen sections as are school children in general in public school grades.[2]

It is very interesting to note here the fact that the group could have been almost as satisfactorily classified on the basis of the students' statement of the grade they reached in public school. For two hundred and twenty-six students, the stated and tested grade locations were compared. The Seneca group's average grade, which was 2.3 according to statements made upon registration, was 2.2 according to the results of the tests. For the Clemson experimental, intermediate, and ad-

[1] The reading score was doubled in averaging. This weighting for averaging based on the S. D. of gains was adopted in order to weight the gains somewhat in proportion to the time allotment in the schedule.

[2] T. L. Kelly, G. M. Ruch, and L. M. Terman. Stanford Achievement Test, Manual of Directions, Yonkers; World Book Company, 1923.

TABLE III. DISTRIBUTIONS OF COMPOSITE READING, WRITING, ARITHMETIC, AND SPELLING SCORES BY GROUPS AND BY CLASSES

	Seneca Experimental Group						Clemson Experimental Group					Clemson Intermediate Group					Clemson Advanced Group							Grand Total
	1B	1A	2	3	4	Total	1	2	3	4	Total	5	6	7	8	Total	9	10	11	12	13	14	Total	
Low 1	6	2	1	..	..	9	5	..	..	..	5	..	..	..	..	..	..	..	..	..	..	..	..	14
High 1	4	4	3	1	..	12	5	6	..	..	11	..	..	..	..	..	..	..	..	..	..	..	..	23
Low 2	1	1	1	..	1	4	1	6	..	2	9	..	..	..	..	..	..	..	..	..	..	..	..	13
High 2	..	..	3	3	..	6	1	1	2	3	7	..	..	..	..	..	..	..	..	..	..	..	..	13
Low 3	..	..	1	2	..	3	..	..	2	1	3	2	..	..	..	2	..	..	..	..	..	..	..	8
High 3	..	..	..	3	4	7	..	..	4	7	11	5	..	1	..	6	..	..	..	..	..	..	..	24
Low 4	..	..	..	1	3	4	..	..	..	1	1	3	..	1	..	4	..	..	..	..	..	..	..	9
High 4	..	..	..	..	1	1	..	..	..	..	..	4	5	4	1	14	..	..	..	..	..	..	..	15
Low 5	..	..	..	..	1	1	..	..	..	..	..	1	5	5	5	16	1	..	..	..	..	..	1	18
High 5	..	..	..	..	..	..	..	..	..	..	..	..	4	..	6	10	2	2	..	..	..	..	4	14
Low 6	..	..	..	..	..	..	..	..	..	..	..	..	1	5	4	10	3	7	4	..	..	1	15	25
High 6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	5	6	6	..	3	..	20	21
Low 7	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	3	3	7	6	4	2	25	26
High 7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	1	2	2	3	1	9	10
Low 8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	6	3	12	12
High 8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	3	6	6
Low 9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
High 9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1
Low 10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1
Total	11	7	9	10	10	47	12	13	8	14	47	15	15	17	18	65	14	19	20	11	18	12	94	253

Thirty-five did not take final tests.

vanced groups, the stated and tested grade averages were 2.6 and 2.4, 5.3 and 4.9, and 6.4 and 6.9, respectively. Not only were the averages close, but in only forty-nine cases was the discrepancy greater than one grade. Those who stated that they were in the first or second grades, scored 17/43 of a grade higher on the tests; those in the third or fourth were 7/42 of a grade higher on the tests; those in the fifth and sixth, 3/89 of a grade higher; and those in the seventh or above, 18/52 of a grade lower. These fractions show that the higher the grade reported, the less the score exceeded the claim until for those reporting grade seven or above, the claim exceeded the score. The latter fact has no significance in view of the frequency with which pupils are promoted because of over-age and long attendance in a given grade. In other words, it may be said that there was no evidence of a general tendency on the part of the Opportunity School students to claim more schooling than they had had.

It should not be assumed that the close agreement found in this study between the stated and tested grades would be true generally. Neither should it be assumed that because the stated and tested grades are about the same for a given group of students that there is no need for initial testing. Such an assumption fails to recognize the need for specific information relative to the achievement and needs of students in different subjects or fields.

It may be of interest to add that in the case of the experimental groups the word recognition test score was found to correlate highly with the composite reading, writing, arithmetic, and spelling scores (Seneca .88 and Clemson .84). As will be shown in Chapter VII, age probably would have been the best single basis for sectioning after students had been graded on the basis of their achievement.

Grade Location Scores on the Separate Tests

The problem of classification was not complicated by the existence of large trait differences as much as might have been expected. Since most of the students who enrolled had had little schooling, and had been out of school for some time, it might have been assumed that they had made much progress along some lines, little along other lines, and had retrogressed in some respects. As shown by the test scores, regularity rather than irregularity characterized their status. There was only a tenth of a grade difference between achievement in addition and subtraction, no difference between the reading of phrases and sen-

tences and the reading of paragraphs, and only one-tenth of a grade difference between those two phases of reading and word recognition.

There were, however, some differences that should be noted. In Table IV, in which appear the average grade scores for each group on the separate tests, the arithmetic average is higher than the silent reading average for the Clemson experimental group, is equal to it for the intermediate group, and is lower than the silent reading average for the advanced group. Four possible explanations are (1) that the shifting rank is a spurious negative correlation due to the method of classification, (2) that these results reflect conditions in the schools which the students attended, (3) that it is a matter of selection, and (4) that the after-school experience affects achievement differently in the various subjects.

TABLE IV. AVERAGE INITIAL GRADE LOCATION SCORES MADE BY THE FOUR GROUPS ON THE SEPARATE TESTS

	Seneca Experimental	Clemson Experimental	Clemson Intermediate	Clemson Advanced
Oral Reading	1.9	1.8	4.9	7.3
Silent Reading	2.2	2.2	4.9	8.1
Writing	1.9	2.4	4.4	5.9
Arithmetic	2.8	3.3	4.9	6.8
Spelling	2.2	2.0	4.6	7.0
Language	..	..	6.1	8.0
Literature	..	..	4.8	6.6
History	..	..	5.2	6.6
Geography	..	..	5.4	6.9
Physiology	..	..	6.6	8.0
Monroe Reading Rate	..	..	4.0	..
Monroe Reading Comprehension	..	..	4.3	..

The first explanation proved to be an incorrect one. When averages were computed, not according to the section in the Opportunity School to which students were assigned, but according to the public school grade reached,[1] the variations in rank persisted, as shown in Table V. That these averages are merely the reflection of the unequal proficiency with which the fundamentals are taught in the schools of South Carolina is considered unlikely because of the size of the differences which amount

[1] Each student was asked at the time of registration how far he had gone in the public school. The answers are used in this study without checking the extent to which night school attendance affected the answers.

in some cases to a grade and a half. In support of this opinion, the following facts may be cited. Mrs. Ellen S. Watkins, in charge of testing in the Columbia Schools, found for the high sixth grade a grade score of 7.1 in reading and of 7.6 in arithmetic; Mrs. Giles Fleming reports for a typical mill school, a higher score in computation than in reading; Miss Mattie Thomas, Rural School Supervisor, found that on the various sections of the Stanford Achievement Test the four highest scores in rank order were in computation, history, reading, and arithmetic reasoning, the highest score being in computation. These records suggest that the relatively high reading scores made by the advanced group may not be explained by a general difference in the efficiency of instruction in reading and arithmetic in the public schools. It would seem that other factors had influenced the current achievement of the adult students.

TABLE V. AVERAGE GRADE ACHIEVEMENT IN THE FUNDAMENTAL PROCESSES BY GROUPS CLASSIFIED ACCORDING TO THE PUBLIC SCHOOL GRADE REACHED

Number Cases	Grade Reached	Reading	Writing	Arithmetic	Spelling
17	1	1.7	1.7	2.9	1.6
12	2	2.0	2.8	3.5	2.3
12	3	3.0	4.3	3.8	3.5
25	4	4.8	4.5	4.8	4.6
31	5	5.6	4.9	5.3	5.1
56	6	7.5	5.6	6.4	6.1
36	7	8.3	4.8	7.0	7.1

An inspection of the median mental ages, presented in Table VI, for those who did not go beyond the first grade, for those who did not go beyond the second grade, and so forth, shows that selection affords a plausible explanation. In view of the fact that the Opportunity School students who had reached the sixth and seventh grades in public school were above average in ability, it might be argued that they scored relatively high in reading because of that ability. Superior intelligence has been shown to function in this manner.[1] Probably

[1] Andrew W. Brown and Christine Lind: "School Achievement in Relation to Mental Age. A Comparative Study." Journal Educational Psychology, 22: 561–576, Nov. 1931. L. M. Stedman: Education of Gifted Children, Yonkers; World Bk. Co., 1924. L. M. Terman and others: "Genetic Studies of Genius," Vol. I, Mental and Physical Traits of a Thousand Gifted Children, Palo Alto; Stanford University Press, 1925.

this partially explains the high reading scores. But since those in the advanced group were not markedly superior, and since high reading scores were made in the intermediate classes which were not at all superior, there remains the possibility of an increase in reading ability since leaving school through independent practice on the part of those who got as far as the fourth grade. It is not conceivable that the relatively low intelligence of those who did not go beyond the second grade accounts for their relatively high showing in arithmetic. The facts therefore suggest that those who left school in the first or second grade continued to learn some arithmetic, doubtless as a result of practical needs.

TABLE VI. THE RELATION BETWEEN MENTAL AGE AND GRADE LOCATION IN PUBLIC SCHOOLS FOR ALL CLEMSON GROUPS

Number of Cases	Grade Location Public School	Median M. A. Pintner Non-Language	Median M. A. Myers Mental Measure	Average of Pintner and Myers Mental Ages
20	1	8:11	9:10	9:5
12	2	9:5	10:9	10:1
12	3	11:2	10:9	11:0
27	4	11:9	12:0	11:11
30	5	12:3	12:6	12:5
56	6	14+	14+	14:0+
36	7	14+	14+	14:0+

With the possible exception of reading and arithmetic, there is no evidence that the adults studied had progressed appreciably beyond the command of the fundamental processes which the public school gave them.[1] Those who left school in the sixth and seventh grades seem even to have lost in the quality of their handwriting.

The Ability of the Groups

The median mental ages for the various Opportunity School classes are presented in Table VII. It is interesting to note the close correlation between the average mental age of each group and the classification which it received. Inspection of the table shows that the only irregularities in the progression are those produced by making pairs of

[1] This statement does not depend upon the correctness of the assumption that they tested at the "norm" for their grade when they left school.

bright and dull sections of classes three and four, eight and seven and ten and nine to which reference was made earlier. A validation of these group intelligence test results, which will be described in Chapter VIII, suggests that if Table VII had been based on individual testing, it would have conveyed the same general impression of the ability of the various groups.

TABLE VII. MEDIAN MENTAL AGES OF THE VARIOUS OPPORTUNITY SCHOOL CLASSES

	Class	Number	Pintner Non-language	Myers Mental Measure	Average
Seneca Experimental Group...	1B	9	6:0	6:8	6:4
	1A	4	6:4	6:10	6:7
	2	6	6:6	8:4	7:5
	3	7	7:3	8:8	8:0
	4	8	8:0	10:0	9:0
Clemson Experimental Group.	1	12	7:2	9:2	8:2
	2	13	8:10	10:3	9:7
	3	8	11:4	10:9	11:1
	4	14	9:7	9:8	9:8
Clemson Intermediate Group..	5	15	11:4	12:6	11:11
	6	15	12:0	12:6	12:3
	7	17	11:5	12:6	12:0
	8	20	14:0	14:0+	14:0+
Clemson Advanced Group.....	9	14	12:0	12:3	12:2
	10	21	14:0+	14:0+	14:0+
	11	20	14:0+	14:0+	14:0+
	12	11	14:0+	14:0+	14:0+
	13	18	14:0+	14:0+	14:0+
	14	11	14:0+	14:0+	14:0+

Concluding Statement

Among the facts presented in this chapter, the following are of special significance: the high reliability of the test measures; the marked similarity in the grade location scores on the separate tests; the close correspondence between grade last attended as reported by the students and achievement as determined by the tests; and the high correlation between mental age and grade location in the public schools. These findings are based entirely on group averages. The original test records showed that there were wide individual variations from the norm in the case of each group comparison made.

IV

The Nature of Systematic Instruction

This chapter describes the daily program, the texts and materials used, the methods of teaching employed in the three groups at Clemson and the one at Seneca, and the academic status of each group.

The Staff and Daily Schedule

In South Carolina the term *Adult Education* has not referred primarily to continuation study on the part of educated adults but rather to elementary education for uneducated adults. The policy of the state has been to include in the group eligible for the adult schools those over fourteen years of age who have not gone beyond the seventh grade in the public schools. Therefore, the curriculum for the adult schools, as well as for the Opportunity School has been built, first, to promote the mastery of the mechanics of learning through the use of inspirational methods, and, second, to present essential subject matter organized around the needs of everyday life. With this age limit and the aims referred to in mind, it has been possible to work towards the realization of the objective defined by James E. Russell, namely, "to inspire grownups to be something more than they are now, and to do their work better than they do it now."

In planning the program of the Opportunity School for 1931 it was decided to concentrate instruction upon the more formal phases of learning in order that the progress made by different groups could be more accurately and objectively determined. During previous years the curriculum had included a more varied program of instruction in certain practical fields. The entire instructional staff for each school was chosen because of previous training, experience, adaptability, and other essential personal qualifications. Eighteen of the twenty-three teachers had college degrees, while the remaining five had attained their equivalent through summer school work. Four had Masters' degrees. The entire staff was professionally minded and since leaving college had continued to study during summer sessions, principally at Columbia University.

In order to meet the special needs of the two experimental groups, the intermediate group and the advanced group, it was necessary to provide two different daily classroom schedules, though all groups worked under the same general campus schedule. The experimental and intermediate groups, which studied the tool subjects primarily, needed only thirty-minute periods, while the advanced group required forty-five-minute periods. Maintaining these two distinct schedules was facilitated by the fact that the groups involved were taught in buildings several blocks apart. The periods were so divided that all groups could assemble for recess at ten o'clock. The daily schedule provided for the two experimental groups—the one at Clemson and the other at Seneca—follows:

The periods from 8:30 to 10:00 A. M.; from 11:00 A. M. to 12:30 P. M.; from 2:00 to 4:00 P. M.; and from 8:00 to 9:00 P. M. were devoted to formal classroom instruction, divided as follows:

Reading	8:30– 9:00
Spelling and writing	9:00– 9:30
Arithmetic	9:30–10:00
Reading and word-study	11:00–11:30
Oral and written English	11:30–12:00
Reading	12:00–12:30
Reading	2:00– 2:30
Related writing and spelling	2:30– 3:00
Personal problems	3:05– 3:30
Directed or library reading	3:30– 4:00
Directed study hour	8:00– 9:00

The Experimental Group at Clemson College

The Clemson group was composed of fifty-eight students, divided into four classes on the basis of preliminary tests, as explained in Chapter III. The status of the various classes and the methods and materials used in different subjects will be described in the sections that follow.

Class I and Class II.—Reading

Class I was composed originally of twelve students. Later, by transfer, the number was increased to fifteen. Of these, five had never gone to day school; six others had gone four months or less; four had gone to night school five months each. The median mental age of the group was 8.2 years. According to the results of the tests

given, this class belonged to Period I as outlined in the *Manual for Teachers of Adult Illiterates*.

Class II was composed of fifteen pupils, five of whom had never gone to school but had learned some of the facts usually taught through personal contacts, and five had gone to school four months or less. The average amount of schooling for the remaining five students was ten months. Of these students, eight had gone to night school. The median mental age was 9.7 years. According to the results of the tests, this group ranked slightly higher than Class I.

The specific aims of teaching reading to total illiterates as given in the *Manual for Teachers of Adult Illiterates* are: (1) to deepen interest in reading; (2) to cultivate a thoughtful reading attitude and to lay the foundation of good habits of interpreting the meaning of what is read; (3) to develop a sight vocabulary of one hundred fifty words, or more, of high frequency in adult reading material; (4) to develop a fair degree of fluency in reading simple material either orally or silently; (5) to direct attention to the element of words as a first step in developing accuracy and independence in word recognition; (6) to establish the habit of reading signs, notices, and directions as they are encountered in daily life and of looking through newspapers and magazines regularly for such items of information as students may be able to secure.

In order to provide a variety of reading experiences, six types of reading activities were used during the month: (1) incidental reading; (2) practice in reading directions and signs; (3) reading based on familiar experiences; (4) reading from basal books; (5) newspaper reading; (6) independent reading by students.

The greatest handicap in making out courses of study for teaching reading to illiterates at the Opportunity School was the dearth of simple, well-graded material, with accompanying work-books, of interest to adults. There are several first readers for adults in print, but the vocabularies increase so rapidly that the students are discouraged by the difficulties they encounter. Therefore, a basal text entitled *Day by Day at Clemson* was prepared for the experiment in mimeographed form by Miss Wil Lou Gray and Miss Erin Kohn. The contents related largely to experiences at Clemson during the summer term.

In teaching reading three types of materials were used: (1) the basal text mentioned above, with work-book, word, phrase and sen-

tence cards, and illustrated dictionary; (2) supplementary material consisting of a specially prepared booklet called "My History," adapted to adults, other booklets, preprimers, primers and first readers, public signs and directions such as "Go," "Stop"; sentence and direction cards, such as, "Clean the board," "Raise the window," "Read first, please, Robert"; announcements, posters, newspapers, calendars; and (3) informal material made as occasion demanded. For a complete list of the texts used, see page 73. The methods used in teaching reading depended upon the type of lesson to be presented, but followed closely the suggestions included in the *Manual for Teachers of Adult Illiterates.*

Interest in reading was stimulated and much valuable practice provided through incidental means, as follows: (1) Posters in the classroom. Posters made up of pictures with appropriate phrases or sentences were displayed. Through discussion the pupils were led to understand the lessons presented by the posters, after which the legends were read. (2) Simple announcements and directions. Space was reserved on the blackboard and on the bulletin board for announcements and directions, such as, "Good morning, boys and girls." "Today is Monday." "Robert, clean the board, please." "Mr. Fowler, raise the windows, please." The students were encouraged to read the announcements and legends immediately upon coming into the room. Not infrequently it happened that the more advanced students became the teachers of the others inasmuch as the regular teachers imposed much responsibility on the class for learning without direct assistance from her. (3) Exhibit of forms. An exhibit of simple forms such as letters, checks, telegrams, was displayed and the students were encouraged to study their content. (4) Important signs and directions. There were scattered over the campus a number of the commonest signs. Duplicates of these and other signs were in the hands of each teacher. Because of their importance some drill was given on them every day. Before presenting the sign a story was told or questions were asked which brought out the meaning and significance of the sign to be taught. Next the sign was displayed, discussed, and studied. When the lesson was concluded the card was placed in a convenient rack in order that the students might have it constantly before them. This procedure supplemented by a daily review helped greatly to make the words a part of the students' working vocabulary.

For basal instruction in reading, the text *Day by Day at Clemson* was used. Each lesson was divided into three parts: (1) Introduction. Interest was aroused in the content of the lesson by recalling related experiences and by making vivid, meaningful associations with the new words in the lesson. Free discussion was encouraged and questions were asked which helped the students to answer in sentences similar to those in the book. These sentences were written on the board and pointed to by the teacher as she read them. Practice was then given in reading them. (2) Reading the lesson unit. After the students had had some practice in reading the sentences from the blackboard they were asked to find them in their books. These were read silently first, then orally, skipping about here and there. After the difficulties were mastered, oral reading was secured by the use of thought questions based on the words of the text. Oftentimes questions such as the following were used: "Read what Miss Rose said, Robert." "Read it the way you think Jimmy said it, Mr. Fowler." Later, as the reading achievement of the class increased, the directions and sentences were written on the board. Finally, the entire lesson unit was read orally by several students. During the evening study hour drill was given on the words of the text, beginning with the newest words and recalling the old words from their setting in the text. (A small rectangular card with a smaller rectangle cut from the middle served as a finder when words, phrases, and short sentences were called for in the text.) A record of each student's special difficulties, such as inability to recognize words and phrases, failure to grasp meanings, leaving off final endings, reading without expression, and reading too slowly, was kept. (3) Drill and check-up. Drill and practice exercises were prepared on each lesson in order to overcome difficulties and to correct errors. Initial training was given in recognizing important elements of words, such as, noting similarities and differences in words, finding familiar words in difficult new words, identifying the initial consonants which occurred frequently in the vocabulary used. Attention was also directed to the short vowels and to the endings of words. Daily reviews were conducted on previous lessons, thus giving students practice on reading page after page of familiar materials. Tests of the completion, matching, selection, and "yes" and "no" types were given.

Various kinds of supplementary material were used. The preprimers, primers, and first-grade readers which were placed on a con-

venient table in the reading room were taught in two ways. Sometimes they were presented about as the basal lessons were taught. At other times the teacher stimulated the students' interest in them through discussion or by reading a part of the text. She then suggested that they complete the stories themselves. They were also encouraged to take the readers to their rooms for independent reading. Another type of supplementary reading was developed in connection with newspapers and the history-screen pictures. The newspaper was used in the following ways: The teacher, through questioning, showed the useful content of a paper. The papers were then distributed to the students and they were shown how to find such things as the name of the paper, the date and location of the paper, the headlines, the price of cotton, the sporting news, advertisements, the weather report, and general news. For variety the teacher would read aloud from the paper or report a current event, which was often followed by discussion and sometimes by a blackboard lesson. For example, the Lindberghs' flight to the Orient was traced on a large outline map by one class. Each stop was noted as it appeared in the daily news. Below is given the content of a typical lesson which was developed on the board through questions and answers: "Lindbergh is flying to Japan. His wife is with him. They started from New York. They will go to Tokyo. They are at Point Barrow now. The trip will be 7,000 miles." In the same way blackboard lessons on history were developed after seeing the Yale Chronicles. A third kind of class lesson was developed from campus experiences. After the class had visited the Clemson chicken farm, for instance, the students talked about their visit. Their conversation was utilized as the basis for a lesson. "We went to see the chickens. We saw the white leghorns. The chickens were clean. The chicken houses were clean. We saw many eggs. We saw the incubator. It takes three weeks for the eggs to hatch." When the lesson had been developed, the students read silently first and then orally, sentence by sentence, in response to questions. They, finally, read the lesson as a unit. The same types of drill and tests were used as were reported earlier for the basal lessons.

Thirty pages of *Day by Day at Clemson* were read by seven members of Class I, the entire book by one member and twenty-five pages by the other six. Six pre-primers, primers, and first readers were read in class or at home by nine members of the group. The remaining six read either one or two of these books. Nine members of the class made

personal booklets which were exchanged and read by the others. The class mastered the commonest signs found in public places and did much reading based on experience. An illustrated book on health was made and left in the library by the group. The fifteen students of Class II read sixty-nine pages of their basal text, *Day by Day at Clemson*. This involved a reading vocabulary of about one hundred eighty-eight words. In addition, they mastered the commonest signs. The students were not held responsible for the words in the informal lessons except for those already familiar and used in the basal text. However, most of the words used in these lessons were taken from the vocabulary of *Day by Day at Clemson*.

Class I and Class II.—Arithmetic

As both classes did practically the same work, the arithmetic summaries are combined. The processes of simple addition and subtraction had to be taught to six members of the group in Class I. Of this class, nine could do simple examples involving these processes. All of the members of both groups had to be taught the names and uses of the number symbols. The processes of simple addition and subtraction were known to each one in Class II.

The aims of teaching arithmetic to the students of Classes I and II were to familiarize them with the fundamental facts of addition, subtraction, multiplication, and division involving integers, and to develop as much skill as possible in the solution of problems that arise in the everyday lives of the students. To attain these aims, the outline as given in the *Manual for Teachers of Adult Illiterates* was followed:

1. Counting, reading and writing numbers.....three lessons
2. Simple addition and subtraction facts, involving zero.....seventeen lessons
3. Column addition.....one lesson
4. Multiplication and division.....two lessons
5. General review.....one lesson

To facilitate the number work ample material consisting of number charts, number cards, toy money, multiplication cards, and instructional tests were provided.

The method used was the same as that of the *Manual*, outlined on page 92. The work to be done was always presented in connection with some personal or class application. Either through questions or

tests, individual needs were discovered. Then a type problem adapted to the needs and ability of the class was developed on the board by the teacher. The processes were explained simply, without technicalities. Ample drill and review were provided to enable the students to master the processes and to apply them later in problems. Effort was made daily to make number facts automatic through various types of drills and instructional tests.

Class I covered the work laid down in the *Manual* through lesson fifteen. Class II completed the work outlined in the *Manual* with the exception of one day's work on division instead of two.

Classes I and II.—Handwriting, Written Expression and Spelling

The students of Class I could do little or no writing at the beginning of the term. Of these five could not even write their names. In Class II one of the fifteen students could not write his name; three others could write only their names; and a third could write his given name only without a copy. This boy was undernourished and, therefore, physically unfit for school work.

On account of the close relationship between handwriting, written expression and spelling, these three subjects were correlated as closely as possible. The specific aims for the month were: (1) to teach students to spell correctly and to write legibly the words they used in their written expression; (2) to teach the correct letter forms, capitals and small letters, and the difficult combinations of certain letters; (3) to spell correctly and to write legibly their names, the names of their home towns, counties, and state, and the name of the current month; (4) to write the heading, salutation, body and ending of a very short letter; (5) to write the spelling words suggested for Period I in the *Manual for Teachers of Adult Illiterates*.

The blackboard, colored crayons, cardboard copy strips and mimeographed sheets were used daily. Each student was provided with a page of mimeograph letters, capital and small, according to forms given in the *Manual*, pages 81–82; and simple social and business letter forms for their notebooks. These materials formed a part of each student's reference material.

No effort was made to teach a particular writing system. Emphasis was given to correct posture, proper handling of pencil, and letter formation. The teacher taught first by short blackboard demonstra-

tions. Students also wrote on the board in order to secure quicker command over form. They were encouraged from the beginning to visualize letter formation rather than to copy blindly, although at first they were permitted to trace. The correct letter forms and combinations were kept before the students all the time, both through copies on the blackboard and by means of mimeographed copy strips which were slipped down the page as the student wrote, thus keeping the correct forms always in front of his eyes. Handwriting was so arranged that very little was done except under supervision. In spelling, the study-test method was used as outlined in the *Manual* on pages 87 and 91.

At the end of four weeks all students in Class I could write their names, the names of their towns, counties, and state. They could also write the alphabet, including both capitals and small letters. Four students could write these correctly from memory while ten had to refer to copies. In spelling the first eighteen words suggested for Period I were taught. Considering the mental status of the students it was not possible to teach a larger number of words in the allotted time. The accomplishments of Class II were the same as those of Class I. In addition, the students learned to spell thirty-one words taken from the list of eighty words for Period I. They could spell much better orally than when writing inasmuch as in their written work they not only had to overcome spelling difficulties but also writing handicaps. They could copy exceedingly well, and could write a short letter limited largely to the words learned in spelling. Class II had fifty-three words on its last test in spelling. The average number spelled was thirty-four; the highest number was forty-nine; the lowest, six. Seven spelled more than forty words. In their effort to write correctly, achievement in spelling was often lowered, and sometimes practically lost.

Classes III and IV.—Reading

Class III was composed of twelve students with an average achievement in reading equal to that of the second grade, as shown by the test. The average age of the twelve students was twenty-five years. One student had never gone to day school. Seven had gone eighteen months or less. Only one had gone forty months. Four had gone to night school. The average amount of schooling they had received was twenty months. The average age at which they left school was fifteen

years. Class IV was composed of sixteen students with an average achievement of the third grade. Their average age was twenty-two years. One had never gone to school at all. Four had gone eighteen months or less. One had gone forty-five months. Eight had gone to night school. The average age at which they left school was thirteen years.

As stated in the *Manual*, the chief aim in teaching reading is to train students to read printed and written material well enough to serve the practical needs of life. The specific aims for Classes III and IV were: (1) to provide much reading of simple material; (2) to stimulate active thinking while reading; (3) to guide students through new and vicarious experiences while reading; (4) to establish habits of silent reading; (5) to expand the reading vocabulary gradually; (6) to develop accuracy and independence in the recognition of new words; (7) to develop motives for independent reading.

The types of reading activities provided conformed very closely to those outlined in the *Manual*, pages 115–125. The six types emphasized in Classes III and IV were similar to those for Classes I and II, namely, incidental reading stimulated in the classroom, practice in reading important signs and directions, reading from basic readers to promote proper reading habits, directed and independent silent reading, motivated oral reading, and daily reading from the newspaper.

The three types of reading materials used were: (1) basal readers; (2) supplementary readers, simple books and magazines, the daily newspaper, and words, phrases and sentence cards; (3) incidental reading, such as, the daily bulletin, posters, exhibits of letters, checks, deposit slips, money orders, and telegrams, and general mimeographed material furnished each student. The texts used are listed on page 73. The lack of suitable material was felt very keenly. When the content of the reading matter was appropriate the vocabulary was too difficult.

It was found advisable to form two sections in reading for Class III and for Class IV. Since the understanding vocabularies of the sections were about the same, the method of presentation was similar. Furthermore, the length of the lessons and their purpose were similar. As far as possible, the lessons were introduced through some experience of the class and the experiences translated into words. The lower sections, however, needed help on the new words, which was provided by writing them on the blackboard and discussing the meanings and their re-

lation to the subject matter and to other familiar words. The upper sections were able to attack the new words after an oral introduction to the unit. Another difference was that the upper sections read the entire unit for a given purpose while the lower sections could proceed only as the entire lesson was broken up into smaller units and one or two paragraphs read at a time for a given purpose or in response to a specific question. The kind of purposes for which the students in the upper and lower sections read also differed. The upper sections often read for purposes that could be answered only by drawing conclusions from facts in the content while the lower sections were limited to reading in response to questions which were usually answered by certain facts stated in the lesson. Both sections read to increase comprehension and the rate of recognizing the vocabulary taught.

As soon as a lesson was read once, it was discussed and then reread to find out any important items that may have been missed or to verify any points of difference that might have arisen. Records were made of the difficulties exhibited and during the drill period assistance was given through the use of phonics, word analysis, and various aids to comprehension. "Yes," "No," "True," "False," completion, and multiple choice tests were given at regular intervals. Supplementary blackboard lessons utilizing the vocabulary of the basal text were developed to overcome word difficulties. During the word study period attention was directed to likenesses and differences in words. Word analysis and important phonetic elements of monosyllabic words were stressed; attention was given also to polysyllabic words. Wide use was made during the incidental and supplementary reading periods of the reading tables, both in the classrooms and in the school library. After definitely assigned reading had been done, reports by individuals and classes were made. Students also secured from the library and brought to class news items, paragraphs on certain topics, short stories, and poems of interest. In order to stimulate newspaper reading, the teacher often read interesting articles. The students were asked to make daily reports on the weather, the price of cotton, and what Aunt Het and Hambone had to say.

Class III read Book II of the *Laidlaw Readers*, which contained seven hundred seventy-eight new words; they also read two hundred three additional pages of reading material. The high section finished Book II of the *Laidlaw Readers* on Wednesday of the third week. They then read *Little Folk of Many Lands*, and fifty pages of the *Bible Story*

Reader. Supplementary reading included *Day by Day at Clemson* with work-book, parts of the *Practical Reader for Adults* and a part of *Practical Exercises in Reading for Elementary Students.* In addition, daily newspapers, word, phrase and sentence cards, local and other selected signs and directions, and books from the library were read. One student received a library certificate. Class IV read as basal Book III of the *Laidlaw Readers* and of the *Learn to Study Readers.* The supplementary reading was the same as that given to Class III. In addition, the students read chapters from easy histories and geographies in connection with their work in current events, and also the Yale Chronicles. Eight students received library certificates.

Classes III and IV.—Arithmetic

The tests given at the beginning to the students in Classes III and IV showed that achievement in arithmetic varied greatly. Some students did not know how to write the numerals while others were ready to begin the study of common fractions. Accordingly, many students were transferred to classes working at appropriate levels. Those who remained in Class III concentrated on addition and subtraction. In Class IV emphasis was given to multiplication and division.

The aims of the instruction given in arithmetic were: (1) to make automatic all addition and subtraction facts; (2) to solve accurately and readily examples involving "carrying" and "borrowing"; (3) to learn as many of the multiplication facts with the reverse division facts as time permitted; (4) to master simple multiplication and division processes; (5) to apply these processes in the solution of everyday problems. To attain these aims the outline in the *Manual* was followed.

1. A brief review of reading and writing numbers
2. Review of the addition and subtraction processes taught in Period I
3. Review and extension of column addition
4. Review and extension of subtraction
5. Multiplication and division facts—multiplication to 3 digit numbers by 2 digit numbers, and division to 5 digit numbers by 2 digit numbers
6. Practical uses of the fractions ½, ⅓, and ¼

No text was used. Number cards, charts, multiplication table folders and instructional tests were supplied. The needs of the students were discovered through the use of questions and simple tests. Practical problems were presented at appropriate levels of difficulty.

The students soon realized that only by a mastery of number facts could they expect to make progress. Conscious need on their part motivated the learning of number facts through frequent drills and reviews. Flashcards and charts presenting the facts to be learned were used during class periods. Accompanying the daily lessons, instructional tests were used. The facts missed by each student were put on cards and given as individual assignments to those who had missed them.

The work as outlined for Period I in the *Manual* was completed by Class III. The first two aims were thus realized in a satisfactory manner. The multiplication and division facts through the third table with a few of the fourth and fifth were learned. Simple multiplication and division processes were mastered sufficiently to serve as a check in solving practical problems. The teachers found that much practice was needed on the multiplication and division processes to insure mastery. Class IV completed the work outlined through Lesson 44 of Period II in the *Manual.* Four members of the class were transferred to a higher section for long division.

Classes III and IV.—Handwriting and Written Expression

The work in handwriting for Class III was on the level of Period I, since none of the group knew how to make all of the small or capital letters. The goals aimed at were: (1) to write legibly; (2) to write correctly in sentences the words they could spell; (3) to write a very simple friendly or business letter in correct form; (4) to address correctly an envelope. The aims for Class IV were: (1) to perfect letter formation; (2) to secure uniformity of spacing, height, and slant of letters; (3) to write more legibly and quickly; (4) to write items of a personal nature; (5) to write simple friendly and business letters; (6) to express ideas in both oral and written forms.

The materials were the same as in Classes I and II. No effort was made to teach a special system of writing or the muscular movement. Correct posture, position of paper, and the handling of the pencil were emphasized. Much practice was given to overcoming former slovenly habits and to form right habits. Through the use of mimeographed sets of the alphabet, the students had the correct forms before them whenever they practiced. Handwriting was closely correlated with all other written work. Much drill was given on letter formation and on difficult combinations.

Class III improved remarkably in view of the very short duration of the term and their advanced age for beginning to learn to write. All written work was laborious for them. Fluency and ease in writing were not attained. Little written work was accomplished because of the time element. However, simple, friendly letters and notes of thanks to scholarship donors were written. Class IV not only wrote simple letters and notes of thanks during the term, but also short compositions and news items for the school newspaper.

Classes III and IV.—Spelling

The aim in teaching spelling to Class III and Class IV was to make rapid progress in spelling all words suggested for Period I in the *Manual* and as many words as possible suggested for Period II; in addition, to learn to spell certain words required in their school work and others included in an individual list.

The procedure adopted in teaching was simple. The first day the students were given ten new words. These words were checked according to the test-study method. The students were supervised during the individual study of the words missed. The second day all students were tested on ten new words; they also reviewed the words missed the previous day. This work was followed by a supervised study period. The method outlined was continued for five days. On the sixth day all students were tested on fifty or more words. At the end of the fourth week all words in the general list were given, and a letter containing sentences made up of the words studied was dictated.

Three lists of words were studied by Class III: a general list, including all the words suggested for Period I in the *Manual*, and forty-five words suggested for Period II; a special list, containing such words as "Clemson College, history, pictures, South Carolina," etc.; and an individual list, containing names of friends, occupations, etc. The first week's test revealed a median number of errors of $1\frac{4}{5}$; the second week's test, $2\frac{3}{5}$; the third week's test, $1\frac{1}{2}$; the fourth week's test, 0. In a general review of all words taught during the four weeks, the median number of words missed by Class III was $2\frac{1}{2}$. Of the one hundred seventy-five words given on the last two days to Class IV, two students made only one error; three made two errors; one made three errors; one made four errors; and one made ten errors. Five of the students were able to take only one hundred thirty-five words on the test. One student made five errors; one,

thirteen errors; one, fifteen errors; and one was too poor to score, partly because of handwriting difficulty.

The Seneca Experimental Group

There were fifty-five students in the Seneca group, divided into five classes according to the results of the same battery of tests that was used at Clemson. The students varied from no schooling at all to fifth grade achievement. The majority of them came from farms and averaged twelve years older than the Clemson group who were mainly textile workers. These facts made necessary slight modifications in the content and methods outlined for the Clemson group. For example, the Seneca students were not provided with as much miscellaneous, supplementary, and incidental material as the Clemson group, but were given more drill on the basal materials. Otherwise, both regular and informal work were in general the same at both schools. In the paragraphs that follow, brief reference will be made to the status of each group taught and the amount accomplished.

Class I was composed of twelve students, none of whom could read, though six could recognize a few words. Three of these had never gone to day school, and five had gone to night school. They reported their average age as forty-five and their average schooling as three months. Their median mental age was 6.4 years. Five students completed the pre-primer containing sixteen pages, specially prepared for the experiment; two students read nine pages; two read six pages; one read five pages; and one read three pages. Five read fifteen pages of *Day by Day at Clemson;* one read twelve pages; one read ten pages; two read four pages; and one read three. It is obvious that Class I was very weak.

Class II was composed of ten students who reported their average age as thirty-four and their average schooling as six months. Their median mental age was 6.7 years. Three of these students had never gone to day school. Five had gone to night school. Four members of the class could read printing a little, and the remainder could call only a few words. Nine students completed the pre-primer during the term. Four read seventy-one pages of *Day by Day at Clemson;* five read thirty-nine pages. The Seneca students were not held responsible for supplementary work. However, they mastered a number of words incidentally, such as those presented as signs, in calendars, the days of the week, the numerals, and so on.

Class III was composed of ten students whose average reading ability was that of the second grade. They had a median mental age of 7.5 years. Their average schooling was nine months, and their average age was thirty-two. One student had never gone to day school. Four had gone to night school. The basal text, *Day by Day at Clemson*, was completed by seven students; *Doings on the Farm*, by eight students; four students read eighty-nine pages in the *Practical Reader for Adults*, two read seventy-five pages, and three read twenty pages; four read fifty pages in the *Bible Story Reader*, two read twenty pages, two read fifteen pages, and one student read ten pages; four students read all of the *Country Life Reader*, four read forty pages, four read eight pages. Students were not held responsible for supplementary work but they read a number of books notwithstanding.

Class IV was composed of eleven students whose average schooling was eight months and average age was forty-one. Their median mental age was 8.0 years. According to the tests this group had attained third grade achievement. Three of this group had never gone to day school. Four had gone to night school. The entire class read the following: *Country Life Reader, Book II*, 109 pages; *Practical Exercises in Reading for Adult Students*, 22 pages; *Day by Day at Clemson*, 91 pages. Seven students read 135 pages in the *Practical Reader*, two students read 99 pages, one student read 67. Six students read as supplementary work the following: *Stories from Æsop* and the *Bible Story Reader*. During leisure hours many pamphlets and bulletins were read.

Class V was composed of twelve students whose average schooling was nine months and average age was thirty-three. Their median mental age was 9.0 years. According to their own statements the last school grade attended was the fourth. Of the twelve, two had never gone to day school. Five had gone to night school. All completed *Day by Day at Clemson*, with the accompanying work-book, the course in literary appreciation, and *A Practical Reader for Adults*. These students did a satisfactory amount of outside reading. All memorized the Twenty-third Psalm. Individual students memorized the following poems: "The Bridge Builder," "For Others," "Opportunity," "Work," "Somebody Said It Couldn't Be Done," and "The House by the Side of the Road." More than twenty students received library certificates.

With the exception of one student who was transferred, all in

Classes I and II could neither read nor write numbers at the beginning of the term. During the month they learned to read and to write numbers, and they mastered the addition and subtraction facts to ten. In Class III the mastery of numbers varied greatly. Some knew none of the numbers while others could do simple addition and subtraction. Students were therefore transferred to sections working at appropriate levels. This group completed the work of Period I as outlined in the *Manual.* Class IV was more uniform in achievement than the others, —only one student being transferred. Period I as outlined in the *Manual* was completed through Lesson 21. Eight students mastered the addition and subtraction facts satisfactorily. Four were unable to make these facts automatic. The test given in Class V at the beginning showed two levels of number mastery. The class was therefore divided into two sections. However, both groups completed Period II as outlined in the *Manual* to Lesson 44.

The students in Class I were not able to write their names at the beginning of the term. All in Class II, except four, attempted to do this but with illegible results. All students learned to write their names and addresses during the term, and also to make most of the letters, both capital and small, without copies. On a review spelling test given to Class I, based on the thirty-one words studied from the list recommended for Period I in the *Manual,* the average number spelled by the group was twenty-two. The highest number spelled by any student was thirty, and the lowest eleven. On a review of the sixty-three words studied by Class II, the average number spelled was fifty. The highest number spelled by any student was sixty-three and the lowest was thirty-six. Oral spelling was much easier than written for these classes. In written work they not only had to overcome spelling difficulties but also handwriting handicaps. They wrote exceedingly well from copy. Some learned to write short sentences and very simple letters. The students of Classes III, IV and V could write, but with some difficulty. Their weekly improvement was noticeable. They learned to write sentences, paragraphs and letters. The students of Class V were able to write short compositions and items for the newspapers. In spelling, Class III completed the list suggested for Period I in the *Manual* and four units of Period II. On the last review test, ninety-one words were given. The average number spelled was seventy-one. The highest number spelled was ninety, and the lowest was fifteen. Class IV completed the words suggested

for Period I in the *Manual* and the first five units of Period II. On the last review test one hundred and three words were given. The average number spelled by the group was eighty-two. The highest number spelled was one hundred and the lowest was fifty-one. Two students were unable to do satisfactory work. The students of Class V completed the work of Period II through the eighth unit. Twenty-five words gave special difficulty during the month, such as "yesterday," "business," "through." However, a majority were able to spell these demons after much drill. On the last review test one hundred words were given. The average number spelled was ninety-three. The highest number spelled was ninety-nine and the lowest number was eighty-four.

Civics was taught informally in all the classes, except in Class V, where a text, *Elementary Studies in Civics*, was used. The lessons on Health, Good Manners, Thrift, Budgeting, Savings, and Government were used and afforded excellent opportunity for much valuable discussion. While this text was too difficult for the other classes, each teacher used it as a basis for civic training. Five minutes every morning were used by the students in scoring themselves with respect to health habits. This device motivated the health work to such an extent that good results were immediately evident. The month's program at Seneca was planned and carried out with a view to stressing good citizenship. Constant social contacts afforded a chance for concrete civic training.

The Intermediate Group at Clemson College

This group was composed of seventy-two students whose average age was twenty years and average schooling was forty-one months. The average age at which they left school was fourteen. Six had gone to day school eighteen months while three had attended night school only. The fact that forty-five of this group had attended night school supplied evidence of their desire to keep on studying. This group was divided into four classes principally on the results of the Stanford reading test. The divisions were designated as Classes V, VI, VII, VIII, with an average of eighteen students to a division. Class V worked on practically the same grade level as Class IV of the Carnegie group, but their learning capacity was much greater. The same general plans and methods were used in the case of all four classes. The

report for these groups can therefore be given as a unit. The daily schedule for all the classes follows:

Reading	8:30– 9:00 A. M.
Spelling and writing	9:00– 9:30 A. M.
Arithmetic	9:30–10:00 A. M.
Reading and word study	11:00–11:30 A. M.
Oral and written English	11:30–12:00 A. M.
Geography	12:00–12:30 P. M.
History	2:00– 2:30 P. M.
Civics	2:30– 3:00 P. M.
Personal problems	3:00– 3:30 P. M.
Directed or library reading	3:30– 4:00 P. M.
Directed study hour	8:00– 9:00 P. M.

Many of the students in this group were still learning to read rather than reading to learn. All of them were able to call words, but the majority could not read easily. For these reasons much time and effort were devoted to inculcating good habits and to training students to read for practical purposes as well as to create a fondness for the printed page, to read for pleasure, and to acquire new experiences through reading. The students co-operated by requesting that at least one-third of their reading be oral. Silent reading was always followed by some type of check-up. The reading texts varied from basal readers to books of biography, history, science, and fiction. Library certificates were won by thirty students who read four books or the equivalent independently during the term.

The aims of the English courses were to correct errors in spoken English, to teach students to write simple sentences, paragraphs, and letters, to make short talks, and to become acquainted with a few literary gems. The work was motivated by class discussions and short talks, by the need for writing social letters and notes of thanks for scholarships, and by competitive writing of paragraphs, news notes, reports of chapel talks, biographical sketches, and compositions for the school newspaper. Marked improvement was noted in the appearance of the outgoing mail which was checked and commented on by the teachers.

The mathematical knowledge of the group varied more than their knowledge in any other given subject. The work assigned ranged, therefore, from a review of the fundamental processes to decimals. Students were transferred during the arithmetic period to classes working at their respective levels. All the classes studied arithmetic in relation to their practical needs, for example, budgeting, saving,

thrift, building and loan, insurance, paying bills, and buying homes Students brought many personal problems to class for discussion and solution. Arithmetic was also correlated with citizenship training relating to taxes and government service.

In harmony with the practice in other groups, no effort was made to use any given system of handwriting. Because of careless penmanship on the part of many students a diagnostic study was made of their writing after which specific drills were given to correct them. In some cases where the aim set for handwriting had already been attained, no further emphasis was given to the subject. There was close correlation between the writing lesson and the written work.

The general plan adopted in teaching spelling was the test-study method. Four spelling lists were used: a general list consisting of the one hundred demons from Ayres' list; the words suggested for the three periods in the *Manual;* a group list; and an individual list. Classes VI, VII, VIII were given fifty words three times a week. In addition to a test based on these words, sentences and letters were dictated which included the words studied. The words missed by the students were included on their individual spelling lists. Supervised study periods always followed the written spelling lessons. All unfamiliar words were emphasized and used in sentences, both oral and written. Students were also trained in the use of the dictionary. An outgrowth of the training in spelling and word study was growth in ability to perceive similarity in words and to acquire command of a growing vocabulary.

The intermediate group was introduced to geography through the use of a globe and maps. These classroom aids were used to teach the causes of day and night, the directions, the divisions of the earth's surface, and how to locate people and places heard and read about. This training was applied specifically in connection with Lindbergh's flight which was charted every day after the arrival of the papers and also to clinch the information obtained through chapel talks by returned travellers. Thus much interest was aroused in geography, which was strengthened through the making of a combined geography and history notebook.

The Yale Chronicles of American Photoplays served as a basis for teaching American history. Preparatory study preceded the showing of each picture. The pictures were followed by socialized discussion which resulted in much emphasis on civics and English, as well as

history and geography. Formal tests were given every week. State history was also emphasized a part of the time and was taught through a definite project. The class work was supplemented by the use of illustrated materials sent on request by chambers of commerce and by talks given by students from different parts of the state on their home counties. Each student was provided with an illustrated sheet containing thirty representative pictures ranging from one of the Governor to scenes from the Piedmont and the coast. These, with pictures obtained through their own effort, were pasted in their notebooks.

Civics was closely correlated with geography and history. As an outgrowth of the study of certain countries civic responsibility toward foreigners in this country was developed. Life on the campus afforded many occasions for object lessons in civic training. The formal work was centered around the material in *Elementary Studies in Civics.*

Various problems of personal adjustment were discussed with the students in both the experimental and the intermediate groups which would enable them to meet more adequately specific questions of a personal and social nature. The out-of-class training received on the campus, in the dormitories, in the dining room and in the chapel, which will be described in Chapter V, was supplemented by class discussions. It was here that the students presented questions which had given them personal concern or which arose from a discussion in the larger group, or among themselves.

Effort was made to have all students participate in the discussions which were conducted, as far as possible, on an impersonal basis. For example, rowdiness at an evening chapel hour led to the preparation of a mimeographed sheet on manners at public gatherings. Rule 7 reads: "Whispering and giggling are bad form. It is inconsiderate. It embarrasses the speaker. It prevents others from hearing." This rule was broken during a performance given by timid students. This act of disorder was considered in terms of the Golden Rule. Oral or written English lessons were also related to problems of personal adjustment. Such topics as good manners in the home and at the table, personal cleanliness, health, thrift, budgeting, first aid, personality, and securing and holding jobs, were emphasized one at a time. A letter from a nineteen-year-old boy admitted his indebtedness to this type of training. "I have secured a place as waiter in the Green Lantern Cafe. If it had not been for what I learned at the Opportunity School

I could not have got nor could not hold this job." Evidently he learned now to meet people and how to serve tables.

The Advanced Group at Clemson College

There were one hundred and three students in the Advanced Group who were organized into six classes. Their ages ranged from fourteen to fifty, with an average age of twenty. The median school equivalent shown by the tests was seventh grade, though few of the students had attended day school beyond the elementary grades. The earning capacity of this group was relatively higher than that of the other groups. Fewer of this group were married than of the other groups; however, many of them assisted in the support of dependent relatives.

Earnestness was characteristic of the school as a whole, but this group seemed unusually ambitious. For the first time in the history of the school seventh grade certificates were offered, which would admit the holder to enter high school. The chief motive of many students was to attain a certificate. Others attended to secure vocational assistance and still others sought general improvement. Two boys who had been no farther than the third grade in day school worked overtime to secure certificates. One succeeded; the other missed by a few points. His disappointment was so keen that he wept. Later he came to the Supervisor's office to discuss his failure. When it was pointed out that through desultory study in night classes and six months at the Opportunity School, about fifteen months in all, he had made nearly four years of advancement, his chagrin changed to surprise and self-congratulation. One student made a desperate effort to attain the equivalent of a high school diploma so that she might enter a training school for nurses. The wife of a self-made mill manager who was also an alumna of the Erskine Opportunity School said she came so that she might better fit herself to share her husband's increasing obligations and also to keep step with her children in school.

The six groups, numbering from fourteen to eighteen students each, were assigned to a home-room teacher, to whom they reported the first hour in the morning and again for the afternoon and the evening periods. Partial election of courses was possible, though all students were required to take English, citizenship, and spelling. This privilege broke up the groups for several periods during the day. However, every student was required to be in class every period. The home-room teacher acted as advisor, not only in the selection of courses but

also in working out individual problems. After the students had become orientated the teachers held conferences with each one, explained his or her scores on the initial achievement tests, pointed out weaknesses, and gave special guidance for independent work along these lines. The program of the Clemson Advanced Group was as follows:

First Period 8:30 to 9:15	Second Period 9:15 to 10:00	Third Period 11:00 to 11:45	Fourth Period 11:45 to 12:30
Mrs. Stroud Arithmetic Rm. 36	Mrs. Stroud Arithmetic Rm. 36	Mrs. Stroud Arithmetic Rm. 36	Mrs. Stroud Arithmetic Rm. 36
Mrs. Suber Eng. and Lit. Rm. 38	Mrs. Suber Eng. and Lit. Rm. 38		Mrs. Suber Eng. and Lit. Rm. 38
Mrs. Fleming Wr. and Spell. Rm. 33	Mrs. Fleming Vocab. Bldg. Rm. 33	Mrs. Fleming Wr. and Spell. Rm. 33	Mrs. Fleming Vocab. Bldg. Rm. 33
Miss Parham English Rm. 7	Miss Parham English Rm. 7		
	Mrs. Gaillard Literature Rm. 21	Mrs. Gaillard Literature Rm. 21	
Mrs. Childs Literature Rm. 6	Mrs. Childs English Rm. 6		
Music Appreciation Mr. Lee		Chorus Miss Sarratt ..... Public Speaking Mr. Williams Rm. 31	Textile Math. Mr. Williams Rm. 31
HOME ECONOMICS Miss Dantzler—Clothing Miss Fair—Foods and Nutrition		HOME ECONOMICS Miss Dantzler and Miss Fair	
		WOODWORKING—Mr. Marshall	
AFTERNOON—2:00 to 4:00 Hist., Geog., Civics, correlated Mrs. Suber..... Group 9 Mrs. Fleming..... Group 10 Mrs. Stroud..... Group 11 Miss Parham..... Group 12 Mrs. Gaillard..... Group 13 Mrs. Childs..... Group 14		NIGHT—7:30 to 8:30 Study Mrs. Suber..... Group 8 Mrs. Stroud..... Group 9 Mrs. Fleming..... Group 10 Mrs. Childs, Mrs. Gaillard ..... Groups 11, 12 and 13	
Chorus.....Chapel Woodworking.....Mr. Marshall			

The aim of the English courses was to point out and correct the errors of spoken and written English common to the group. In this connection a few common errors were studied at a time followed by much practice in speaking and writing the correct forms. For oral language work the students were asked to report on chapel talks, the Yale Chronicles, and campus life in general. Constructive criticisms on these reports were made by teachers and classmates. A number of short themes and various types of letters and articles for the school newspaper gave practice in written English. Patterns were set and studied and corrections indicated on the work handed in to the teachers. Newspaper contributions gave motive for a number of excellent papers varying in theme from campus happenings to biographical sketches. Reporting on certain chapel talks and activities was a regular assignment, which often revealed real ability among the students. A lecturer said after reading one girl's report of his talk, "I could not have reported one-half so well myself." The literature teachers endeavored to stimulate interest in the best types of recreational reading. Collections of short stories and poems and such abridged editions of the classics as were available were used. Some of the poems and stories were read aloud by teachers or students, while others were read silently by the class. Short book reviews were written by the students who were working for library certificates. As each author was studied a brief sketch of his life was prepared by a student assigned to look up this information. Carefully compiled lists of books for recreational and cultural reading were given to the students and they were encouraged to secure these from local libraries after the Opportunity School closed. One class studied and compared one of the standard current magazines with a cheap sensational one. This brought forth several requests for names of magazines which published short stories of some literary merit. The study of the novel, modern and classic, was limited because very few adaptations were available. The members of the public speaking class studied simple parliamentary procedure, held several debates and one declamation contest, presided at the public meetings of the school, introduced speakers, made motions and offered resolutions.

In arithmetic the aim was to secure as far as possible mastery of the processes useful in the daily lives of the students. There were four large classes taking arithmetic each day. Two of them were for the elementary students, and two for the students whose scores on the

Stanford tests indicated a high grade equivalent. Both sections used mimeographed daily practice sheets, which gave a quick review of the fundamental processes. The students progressed from one assignment sheet to another at their own rate of speed. More practice material was furnished as ground was covered. Problems based on situations familiar to the students were frequently used. The elementary groups did some work in the simpler operations with fractions. The more advanced classes worked with the more difficult operations in fractions, and with decimals and percentage. Units on budgeting, on taxation, and on investments were taught to the latter.

Every effort was made in spelling, vocabulary building, and handwriting classes to meet the actual needs of the students. In vocabulary building, the aim was not only to increase the size of the student's vocabulary, but also to train in simple word analysis so that the student might acquire a method of attack in finding out the meanings of new words. The words used for teaching suffixes, prefixes, and roots were, as far as possible, drawn from the vocabulary of the students. For general practice in spelling the test-study plan was followed, and the Ayres spelling list and those in the *Manual* were used. From two hundred fifty to four hundred words were specifically studied, varying in number according to the class. The aim of the writing classes was to develop a rapid, legible hand without attempting to teach a particular system of handwriting. Correct posture and, where necessary, the proper handling of the pen were also stressed. Students who wrote legibly were advised not to enroll in the penmanship classes. The principles learned were applied to all written work. A specimen sheet was secured from each student at stated intervals. These samples formed a progress chart which was used for purposes of comparison.

Since many of the Opportunity School students were actual or potential homemakers, the home economics classes were very popular. These classes were organized around the needs and interests of a simple home. Due to the time element only three phases of homemaking were possible during the summer. They were sewing, cooking, and home furnishing and decoration. The aims in the sewing classes were to give an understanding of the basic steps in sewing, to point out characteristics of appropriate dress, and to study simple home decoration. Each student made a notebook in which were placed the samples of the basic steps as she completed the work. Each of the girls made a simple cotton frock. They gave a very successful style

show in which each girl modeled the frock she had made. A dress made of South Carolina prints for the visiting teacher from Newfoundland proved to be a very interesting class project. A short play illustrating appropriate dresses for various occasions was a feature of the closing exercises. Home decoration was taught during the month through the study of pictures of interiors, samples of materials, and practical rules. Three of the dormitory rooms were inexpensively but tastefully furnished and decorated as a part of the commencement exhibit. There were a dining room, a sitting room, and a bedroom. The food classes studied the needs of the body and the various foods that supply these fundamental needs. The problem of costs and family budgets was also considered. In actual preparation of foods, the class did good work, frequently preparing special dishes which were served in the dining room to the entire school. Each student prepared a notebook clearly illustrating every phase of the work taken. Table manner and service were taught. Much emphasis was laid on the social amenities relating to these matters. The students acted as waitresses, hosts and hostesses, and guests at several of the special dinners served in the dining room. Under the direction of the teacher, they planned the menus, set the tables, and made the table decorations.

There were two classes in textile mathematics, one organized for students in the advanced groups who expressed a desire for such training and the other for those just beginning to use textile calculations. The aim was to solve the practical mathematical problems arising in carding, spinning, and weaving. The problems were stated, the principles involved were explained, and the solutions were attained in a practical way. About twenty students elected this work, most of them for direct vocational aid.

The woodworking class centered on several comparatively simple projects. Each student made book-ends, door stops, and candlesticks at first, and later an end-table as his major piece of work.

Every afternoon from two to four o'clock students reported to the home-room teachers for instruction and guidance in the study of civics and history. The basic idea of the Opportunity School is to make better citizens. Therefore the course in civics was planned to include South Carolina history, geography and state government, and the dependence of the state on other states and countries, thus promoting a more responsive civic attitude and a more intelligent understanding

of their economic dependence on the rest of the world. One group took a short course on the state's natural resources with emphasis on trees and forestry. The formal United States history work was based on the Yale Chronicles. All students in the intermediate and advanced groups were required to report on these pictures which ran for twelve nights. Daily class discussions and weekly check-ups were given. Since the pictures necessitated a consideration of other countries which played a part in the early history of the United States, a certain amount of world history and geography had to be studied.

One class composed mainly of former students did most of their work in world geography with emphasis on a selected country. One student reported every day on the foreign news in the daily press. Much parallel reading was provided for these classes and was directed by the school librarian. Preparing notebooks was an important part of their work. The advanced students used outlines largely in their notebooks while the intermediate ones used more illustrative material, some of which was furnished and some secured by the students themselves from magazines and other printed sources.

Reading Texts Used by the Experimental and Intermediate Groups

Basal

Gray-Kohn. *Day by Day at Clemson.* Mimeographed.

Dressel, Veverke and Graff. *Laidlaw Reader*, Book II, III. New York: Laidlaw Publishing Co.

Prout, Baumeister, Mischler, Renner. *Thought Test Reader*, Book II, III. Lincoln: The University Publishing Co.

Walker-Summy. *Study Reader*, Book III. New York: Charles E. Merrill & Co.

Horn and Others. *Learn to Study Readers*, Book III, IV, V, VI. New York: Ginn & Co.

Dressel, Robbins, Graff. *New Barnes Reader*, Book V. New York: Laidlaw Brothers.

Freeman, Storm and Johnson. *Child Story Reader*, Book VII. Lyons and Carnahan.

Oliphant. *South Carolina Reader.* Columbia: The State Co.

Supplementary

Gray-Kohn. *My History.* Mimeographed.

Elson-Gray. *Pre-primer.* Atlanta: Scott, Foresman & Co.

Elson. *Pupil's Hand Chart.* Atlanta: Scott, Foresman & Co.

Wheeler. *My First Book.* Chicago: Wheeler Publishing Co.

Smith-Sutton. *Open Road to Reading.* New York: Ginn & Co.

Suzzalo, Freeland, McLaughlin and Skinner. *Fact and Story Reader,* Book I. Atlanta: American Book Co.

Stewart. *Country Life Reader,* Book I, II. Richmond: B. F. Johnson Publishing Co.

Mason-O'Brien. *A Practical Reader for Adults.* New York: D. C. Heath & Co.

Jones, Gray and Gray. *Bible Story Reader.* Richmond: B. F. Johnson Publishing Co.

Stewart. *Mother's First Book.* Richmond: B. F. Johnson Publishing Co.

Morris. *Practice Exercises in Reading for Adult Elementary Students.* Mimeographed.

Morris. *Citizens' Reference Book.* Chapel Hill: University of North Carolina Press.

Chance. *Little Folks of Many Lands.* New York: Ginn & Co.

Chance. *Happy Hour Project.* Webster Publishing Co.

Serl. *Everyday Doings on the Farm.* New York: Silver, Burdett & Co.

Serl. *Everyday Doings at Home.* New York: Silver, Burdett & Co.

Serl. *Everyday Doings in Healthville.* New York: Silver, Burdett & Co.

Serl. *In the Animal World.* New York: Silver, Burdett & Co.

Gonzales. *Stories from Æsop.* Columbia: The State Book Co.

Reiter. *Boyhood of Lincoln.* Danville, New York: F. A. Owen Publishing Co.

Reiter. *Boyhood of Washington.* Danville, New York: F. A. Owen Publishing Co.

McCabe. *Boyhood of Longfellow.* Danville, New York: F. A. Owen Publishing Co.

Farris. *Boyhood of Franklin.* Danville, New York: F. A. Owen Publishing Co.

Farris. *American Inventors.* Danville, New York: F. A. Owen Publishing Co.

Farris. *The Story of Poe.* Danville, New York: F. A. Owen Publishing Co.

Lee. *An Adaptation of Les Miserables.* New York: Horace Liveright.

McCants. *History Stories and Legends of South Carolina.* Dallas: Southern Publishing Co.

Eggleston. *Stories of Great Americans for Little Americans.* Atlanta: American Book Company.

Patri. *The Spirit of America.* New York: American Viewpoint Society.

Blaisdell and Ball. *Pioneers of America.* New York: Little, Brown & Co.

Coe. *Foundations of Our Country.* Atlanta: American Book Co.

Bass. *Stories of Pioneer Life.* New York: D. C. Heath & Co.

Wallace. *Overcoming Handicaps.* New York: Doubleday, Doran & Co.

Estill. *Beginner's History of Our Country.* Dallas: Southern Publishing Co.

Much use was made of the history and geography texts in the library, bulletins, commercial material, the daily papers, and the school paper.

V

Informal Instruction and Training

This chapter is concerned with the informal, out-of-class training provided at the Opportunity School. It describes the nature and methods of such training and the value, often intangible and immeasurable, of the lessons taught and learned through contacts with others rather than through reading.

The Clemson Program

Realizing that the results of informal training and guidance are often quite as valuable as those of regular classroom instruction, a rich and varied program of informal instruction and training was organized to provide for the social, moral, and personal needs of the students. One of the chief problems encountered in carrying out such a program effectively was to awaken new interest among the students and to create a demand for finer and more wholesome habits of living. The remark made by a student to her adult teacher illustrates the status of more than one-half of those who enrolled. The teacher was insisting upon better health habits and the use of certain necessities. The girl replied quickly, "You don't miss what you ain't never had!"

The informal teaching covered a wide field. It related to various problems from tooth paste to bedding; from being on schedule time to keeping quiet after the light bell; from the use of the trash containers to social introductions; from the proper treatment of servants to deference to elders; from behavior at public gatherings to listening intelligently to music; from prejudice concerning such places as the swimming pool to worship in a church of another faith; from racial prejudice to religious fanaticism; from an individualistic attitude to co-operative living; and from self-satisfaction to salutary discontent. The faculty was agreed that one of the essential functions of the Opportunity School was to teach the wise use of leisure, the amenities of life, the value of acquiring an open mind, an appreciation of the

good and the beautiful, and the need of dependability, punctuality and civic responsibility.

Probably one of the most important problems faced by all students during the four weeks related to self-adjustment. The students who came together at Clemson represented various levels from the best to the poorest of the textile and agricultural groups from which they came. The age range was wide—from the mischievous, fourteen-year-old boy to the careworn great-grandmother, and from the unsophisticated boys and girls in their teens to the serious-minded fathers and mothers. Some were mentally alert, some were slow; some were clean, some were dirty; some were physically fit, some were sick, undernourished, or lazy. To some the school was a vacation; to others it was a rare opportunity. It is apparent that self had to be subordinated in many cases and the rights of others considered. Here the brain rather than the hand had to take the initiative. To orient and coordinate the group into a happy, working family was a real undertaking in which both teachers and students participated.

In order to make wise use of all periods during the day, the following schedule was effective from Monday morning until Saturday noon each week:

Rising bell	7:00 A. M.
Warning bell for breakfast	7:20 A. M.
Breakfast bell	7:30 A. M.
Housecleaning	8:00 to 8:30 A. M.
Instruction period	8:30 to 10:00 A. M.
Recess	10:00 to 10:15 A. M.
Physical setting-up exercises	10:15 to 10:30 A. M.
Chapel	10:30 to 11:00 A. M.
Instruction period	11:00 to 12:30 P. M.
Warning bell for dinner	12:40 P. M.
Dinner bell	1:00 P. M.
Instruction period	2:00 to 4:00 P. M.
Do-as-you-please hours	4:00 to 6:00 P. M.
Warning bell for supper	5:45 P. M.
Supper bell	6:00 P. M.
Play	6:30 to 7:30 P. M.
Vespers	7:30 to 8:00 P. M.
Supervised study hour	8:00 to 9:00 P. M.
Picture hour	9:00 P. M.
Warning bell for lights-out	10:15 P. M.
Lights-out bell	10:30 P. M.

Although the day was scheduled to begin at seven o'clock, many students arose much earlier to study, to do their laundry, or to arrange

their rooms. These early risers supplied an early occasion for a concrete lesson on the rights of others. That such training was effective was shown by the fact that as the days passed the late sleepers made fewer complaints.

Training in Housekeeping

Following the breakfast hour came the house-cleaning time when all students went to their rooms to prepare them for inspection which took place from nine to ten daily. During the first week the boys' director and the girls' housemother met their respective groups in conference at which regulations and standards were discussed. Students were required to put away their clothes, make their beds, and sweep the floors. Inspection of the girls' rooms was possibly less rigid than that of the boys'; however, if carelessness was observed, the housemother left notes suggesting more care. On the other hand, if rooms appeared unusually neat, commendatory notes were written. In addition to caring for their rooms, the girls did their personal laundering and pressing. Unfortunately tubs and irons were not very plentiful in the rooms provided for these activities which afforded another opportunity to emphasize co-operation and consideration of the rights of others.

Outside laundry service was used for bedding and towels for the whole school and for a limited number of garments for the boys. In order to effect a saving in the laundry budget, the boys agreed to imitate the army recruits by doing most of their personal laundering. In this way the boys were able to keep cleaner (for many had too few clothes to be clean otherwise), to look better, and to feel more respectable during the hot days. One day's check in the boys' dormitory revealed seven hundred ninety-six garments on the lines in the boys' rooms and forty-four cakes of soap fewer in the office. Incidentally the boys acquired respect for household duties—"woman's work," as they expressed it—and also took pleasure in assisting the school authorities to make the scholarship fund meet the required demands.

As the school was organized largely on the basis of family life, housekeeping duties extended to the classrooms and the campus. Committees were appointed regularly to sweep the rooms. Every one cheerfully performed a given number of details. Besides those regularly named for work, the ones who violated the few adopted regulations were assigned special tasks. This group was never large;

hence sweeping the classrooms became an honor or a volunteer service rather than a penalty. Participation in these chores drove home many important lessons relating to the condition of classrooms and to the throwing of paper on the floor or trash on the campus. As the weeks passed the students became more conscious of their responsibility for keeping their surroundings clean. That the students were forewarned of their obligations in this connection is shown by the following comment from an alumnus to prospective students in a night school who were considering the wisdom of attending: "I'll tell you in advance, you needn't throw paper and trash on the floors or grounds unless you want to pick it up again!" Evidently the training lasted longer than the four weeks this man had attended the school.

As had already been implied, housekeeping required patience and co-operation on the part of all concerned. Since twenty dollars had to cover all expenses for the month, it was necessary for each student to contribute his share of time and energy. Fewer than ten servants were employed by the school. Lack of money proved to be a blessing for three reasons. First, it made it necessary for everybody to lend a hand with the result that pride in personal appearance and in the appearance of the college was developed. Second, it made housekeeping tasks appear in a new light. Third, it proved that homemaking could be a great co-operative enterprise.

Training in the Dining Room

The time between the warning bell and the opening of the dining room gave the teachers and students an opportunity to become well acquainted as they waited on the steps or in the vestibule. Due to the fact that there were no rules regulating entrance to the dining room, the students came in informally. There was no crowding, no unnecessary haste, and very little tardiness at meal times. At first the students chose the tables at which they sat. Each table was presided over by a teacher or former pupil. Twice during the term the seating arrangements were changed so that students and teachers might become more widely acquainted. The dining room provided excellent opportunity for informal instruction in such matters as balanced meals, proper eating habits, and appropriate table service and table manners.

The dining room was in charge of a dietitian who assigned duties to the students and consulted with the steward concerning the prepara-

tion and serving of the meals. The menus were planned with two aims in mind, namely, the greatest nutritive values and conservative costs. In order to establish proper eating habits, a meal schedule of twenty minutes for breakfast, twenty-five minutes for luncheon, and thirty minutes for dinner was adopted. At the end of each meal period, necessary announcements were made after which the students were at liberty to leave the room. Eating too rapidly was one of the worst habits of the group. Adherence to the Health Director's meal schedule eliminated any advantage in rapid eating and thus facilitated the development of better habits in this connection. At times the class in home economics prepared salads and desserts for the entire school and during the meal period explained the preparation of each dish and offered to furnish recipes to students, hoping thereby to encourage a more varied diet at home.

Service in the dining room was the most difficult requirement made of the students. The girls co-operated by setting the tables and preparing the fruits and vegetables. The boys served the food and cleared the tables after meals. It was remarkable how popular waiting on the tables became despite the real labors involved in serving three hundred people. In addition to those chosen alphabetically to serve, some of the laziest boys in the classrooms often volunteered to take the places of the physically lazy. Waiting on the tables required agility, strength, and effort; nevertheless, waiters were easy to secure. Not all the boys, however, were naturally alert and clean and adapted to this work, but they were chosen alphabetically nevertheless and given the necessary training. In such cases the hardship was often greater upon those at the tables than upon those serving.

Table manners were taught directly and objectively in the dining room. To motivate this teaching and to furnish an impersonal approach to the subject, a page of mimeographed suggestions was prepared and placed at every plate. The first lesson was reinforced that evening by a good-natured dramatization of the most serious mistakes noticed that day in the dining room. Sometimes the instructors felt that improving table manners which involved the breaking of life-long habits was a hopeless undertaking except among those who were conscious of their defects and wished to change. However, unexpected reactions were often heard or reported. A paragraph from a student's letter sent in after the close of the term illustrates how the instruction did carry over at times: "We had our annual banquet last

night, and for the first time in my life I knew what to do. John and I had an argument about how the fork should be placed on the plate when the meal is finished. He said that the prongs should turn down, and I said they should turn up. Please let me know right away which one is wrong."

The dining room was the school's clearing house for announcements of all kinds, for the general exchange of amenities, for the introduction and welcoming of visitors, and for songs and yells. At intervals the dining room was the scene of dinners and banquets. The menus were arranged, the festive tables set, and the service furnished by the home economics class and the regular waiters. The largest county club had a lively dinner one evening which resulted in the need for some very specific teaching because of the lack of good sportsmanship on the part of some who were not sitting at the party table. The courteous behavior during the next special dinner which came about a week later was in marked contrast with the hilarity and petty jealousy that had been exhibited at the previous one.

The school's eleventh birthday, as well as the birthdays of the teachers and pupils which came within the dates of the session, were celebrated very beautifully. The most pretentious dinner was the Alumni Banquet, presided over by the President of the student body. Fifty-five students and fifteen teachers were present. In order to emphasize the importance of the Alumni Banquet, the new students were not permitted to have dinner in the dining room on that occasion, but were given a picnic supper near the river. Inasmuch as the students had had no training in after-dinner speaking, it was necessary for the teachers to help them with many details. They did remarkably well, however, in view of their limitations. Thus they translated the instruction received into everyday living, learned the value of courtesy, developed a slight sense of humor, and formed their own conclusions concerning the value of the niceties of life. On banquet occasions the orchestra played the school songs and other favorites, and thus added its bit to the pleasure of the occasion.

The first lesson taught in the dining room was punctuality, the second was good manners, and the third was good sportsmanship and sociability. An incident that happened one day in the serving pantry illustrates how the training given often carried over. During the last week of school three hundred 4-H Club boys also occupied the dormitories and shared the dining room. These boys were served by the

regular college colored waiters. In order to expedite the service, the steward told each waiter to take his turn when coming back for extra supplies of food. One Opportunity School boy rudely objected to having a negro's dish refilled before his. The steward reprimanded the student and explained that all waiters fared alike in the kitchen. At first the student angrily resented this ruling. However, by the following day he saw things in a different light and came to the steward with a manly apology and went cheerfully back to work.

Physical Training and Recreation

The wise use of leisure has recently become a burning issue in the welfare of the nation. Not knowing how to utilize free time has often driven the uneducated boys and girls, and even the men and women, to recreational activities of a cheap or questionable nature. Almost all the friction or mischief that has been reported at the Opportunity School during the eleven years of its history occurred during free hours. Therefore, special effort was made this year to teach students how to use their leisure hours profitably in reading, in study, in play, in making things, and how to enjoy simple recreations of a non-commercial type.

A certain number of hours were given daily to definite physical development and recreation. Every morning at ten o'clock there was a short recess followed by setting-up exercises from ten-ten until ten-thirty. In the afternoons from four until six o'clock students were free to select their own recreation, to study, to sleep, to clean house, to do their laundry, to stroll over the campus, or to do whatever else they preferred. From six-thirty until seven-thirty was reserved for organized play. On Saturday afternoons and evenings the students were free to do as they pleased.

Among the many contributions of Clemson College to the Opportunity School was the assistance, gratis, of a colonel of the United States Army and his lieutenants and sergeants for daily setting-up exercises. Every morning after recess, the small parade grounds became the chief center of interest on the campus. The exercises provided were not compulsory, but they were very popular among those who had the stamina to persist. Marked improvement in carriage and posture rewarded the boys' efforts, but, according to the lieutenant, very little improvement was noted among the girls.

At certain hours during the afternoon the gymnasium, the swim-

ming pool, and the athletic fields were open to the students. The tennis and volley ball courts were always available to those who cared to use them. Another less active form of recreation was provided by the large comfortable chairs under the magnolia trees, with a victrola within reach, for those who were *overcome* by classroom effort or who preferred to watch games rather than to participate. An attempt was made to have organized play from six-thirty until seven-thirty, but it failed largely for three reasons: (1) funds did not permit employing a trained leader; (2) the students were usually tired from the crowded schedule of the day; (3) the weather was very warm at times.

To live on the Clemson campus was both a recreation and an education. The college grounds, the laboratories, the experimental farms, the textile and other departmental buildings opened the students' eyes and minds to the value of scientific knowledge and experimentation. To illustrate—on the first Sunday afternoon several boys and girls strolled down to the apple orchards. The ground was covered with tempting red fruit which was going to waste, apparently. The group proceeded, therefore, to appropriate all they could carry in their pockets and hands. They then strolled leisurely back to the grassy lawn, sat down, and began to enjoy the spoils. A local passerby, who knew the regulations, reported their misdemeanor to the caretaker. He immediately went in search of the students and brought them to the Supervisor, who happened to be in the midst of a large crowd waiting for the dining room doors to open. He explained that the offense merited a fine of ten dollars. However, he turned the matter over to the Supervisor and waived the fine on the promise of no further trespassing by the school. The students said in defense: "You didn't tell us not to pick up apples; you just told us not to touch anything. We didn't know they were any good." In view of the fact that the miscreants were brought to public court, as it were, the incident had to have a public settlement also. At the supper table the case was stated briefly. An explanation was made of how the pilfering had interfered with a scientific experiment. The crestfallen students were exonerated of stealing. This closed the incident and there were no future offenses.

The Clemson plant was so large that organized sightseeing trips were planned for both white and colored students. The groups toured the campus and showed as keen interest in the thoroughbred livestock in the barns as in the priceless collection of oil paintings in the library.

The Mecca for all sightseers, however, was the Calhoun Mansion, the home of John C. Calhoun, South Carolina's famous orator and statesman. Before one of the students visited the old home with his teacher, he reported with disgust that he had peeped through the blinds and had seen nothing but some old furniture. Later when he was personally conducted through the house, he was thrilled by the stories he heard and especially elated to learn that the eagle on the davenport was the one from which the eagle on the United States currency was designed. From that time on old furniture had increased value in his estimation and his outlook, as well as his vocabulary was increased. Another student wrote: "It (the Opportunity School) has taught me things I would not have known had I not gone to Clemson. It seemed to inspire me with new ideals and make me take more interest in everyday life."

Training in Chapel

The chapel periods were used as a medium for informal and cultural training. Here the student body met twice daily—from ten-thirty to eleven in the morning and from nine to ten in the evening, on five evenings each week.

Morning chapel began with a short devotional service, followed by the singing of school songs and sometimes with selections played by the orchestra. The remainder of the program varied from day to day. Sometimes there were discussions on learning to live together, or stocktaking based on the previous day's mistakes, or greetings or lectures from visitors, or dramatizations illustrating some point to be driven home to all the students, such as good and bad manners, good and poor taste in dress, and the importance of posture in relation to business and social success. During this hour all general mimeographed materials, such as daily schedules and song sheets, were distributed. The speaker for the first week was the Child Health Director of the South Carolina Tuberculosis Association who set up the health standards for the month. This course began with the distribution of daily health score cards which were put into the notebooks of the students. The score cards contained twenty very essential health habits. With these as opening wedges the teachers were able to teach pointedly without appearing to be personal. Such instruction and guidance were reasonably effective. Visitors who came during the first few days and again towards the end of the term volunteered the

information that the group not only acted better but also looked cleaner and more responsive. The President of Clemson made the following observation: "The change for the better in the very appearance of the student body is most noticeable to all of us who have watched the group from week to week."

During the second week a fifteen-minute drill on spoken English, with special emphasis on the commonest errors heard around the campus, was a daily feature. The Head of the Clemson College Department of English, the most popular lecturer in the state, gave two talks, one on poetry and the other on "The Marks of a Gentleman." The Business Manager of the college talked on the history and traditions of Clemson, showing how thrift on the part of the donor of the college estate had made possible his gift to the state. A guest observer from Newfoundland gave three talks on her island home. The psychologist in charge of the experiment gave two lectures on "Why I Think and Act as I Do."

The chapel talks were often used as a basis for oral English activities. One class in discussing what courses they would like to have next year engaged in the following dialogue: "I would like more psychology," said one student. Another replied, "Oh, boy, you can't understand psychology." "I certainly can. I understood every word Dr. Tilton said." The second answered, "Well, I didn't know *that* was psychology." The class agreed that if these two lectures were psychology, they needed much more of that subject. The more advanced classes based some of their written work on these talks and also reported them for the school newspaper.

The group was fond of music, but theirs was an uncultivated taste at first for jazz, loud singing, and nasal intonations. Their general fondness for music, however, was capitalized daily by the school as a whole and by selected groups. "I hear America singing" might have been changed to "I hear the Opportunity School singing," for the students entered enthusiastically into this part of the chapel program. There were two organized music groups—an orchestra and a mixed chorus. The latter had been a part of the school for years, but the former was an innovation. The orchestra included the violin, piano, guitars, drum, harmonicas, and kazoos under the direction of a skilled violinist. This group was in demand on all occasions as was also the leader with his instrument. After the evening picture program, they often played by request from the students themselves. The chorus

was unusually large and the voices more controlled than in former years. The change for the better was probably due to two causes, the large number of former pupils singing in the chorus and the influence of good music over the radio.

Music appreciation was taught incidentally to the whole school when time permitted and occasion offered, sometimes through questions and at other times through the use of the victrola. There was no attempt to present any form of music technically, but rather to provide opportunity for expression and appreciation. Effort was made, however, to teach students to recognize right tones and to be able to take back to their local choirs better standards of vocal music. On the third Sunday of the term the two music groups took charge of a local choir. "Handel's Largo" as well as the usual hymns were intelligently rendered. During ensemble singing each evening the words of the songs used were thrown upon the screen to enable the students in the experimental group to take part also.

Religious, Moral, and Civic Training

The day's program included a definite period for religious, moral, and civic training in addition to the short devotional exercises at morning chapel. Every evening just before seven o'clock students made their way to the west campus for the sunset service. There in the great out-of-doors all took part in a simple service of worship. The program was in charge of a teacher who was often assisted by students, townspeople, and invited speakers. The State Director of the Baptists Young People's Union was the volunteer leader for the first week. Her talks were based on the beauties of nature, so many of which were a natural part of the hillside scene, and illustrated admirably the points she emphasized. Returned missionaries brought glimpses of other worlds and illustrated their talks by showing curios and slides.

One unforgettable vesper service was conducted by the Seneca Opportunity School when the students came on a sightseeing visit to Clemson. The service was held indoors to enhance the singing of the spirituals. The voices of these singers were most melodious and blended like the tones of a well-played organ. This program was planned to last only a half hour, but the repeated requests for additional numbers extended it to an hour or more. At the conclusion of the service a member of the public speaking class expressed the thanks and appreciation of the Clemson group for the contribution the

Seneca group had made to the pleasure and value of the evening service.

On Sundays the students were expected but not required to attend Sunday School and morning worship in a local church. During the first week, the Supervisor sent letters to the students' families asking their co-operation on two points, namely, not to take the students home over the week-ends, and to visit Clemson only during free or visiting hours. The suggestions were readily accepted, and visits were made seemingly by all who could secure transportation. Some families often arrived before breakfast, bringing picnic dinners for themselves and watermelons for the teachers, attending service, and making themselves generally at home. During the course of the term, hundreds of relatives and friends visited the school.

A quiet hour was observed on Sunday in the girls' dormitory from two to four o'clock. No Sunday restrictions were found practicable with the boys. Following the quiet hour all the girls came out on the campus to meet their visitors. Although this was a vigorous time for the teachers who acted as hostesses, it was a very happy time for the students. They never tired of introducing their friends and relatives to their teachers and showing them over the campus, the dormitories, and even the kitchen. On Sunday evening inspirational speakers brought practical messages to the students. On the last Sunday night the President of the college at which the boys' school had been for the last eight years conducted his annual consecration service. A farewell religious service was held at sunrise the closing day. At this time the teachers and students also expressed their approval of the month's work and associations, and agreed to spread the ideals of the Opportunity School wherever they might be.

Training Through Evening Entertainments and Movies

Every evening following the study hour, which was over at nine o'clock, there was some form of music, entertainment, or instruction—sometimes all three—in the chapel. This hour was open to the public. In order to enliven the South Carolina history project which was developed formally in the afternoon classes, the first evening entertainment was given by one of the state's most popular poets. At the request of the students the poems they enjoyed most were published in the school paper and used for memory work. Forestry conservation pictures were shown for the greater part of the first week, so that the

nature study classes in particular, and the school in general, might profit by the picture lessons.

Every Saturday night the students arranged the evening program and were entirely responsible for its presentation. They did this with enthusiasm and unexpected success. Two stunt nights given by county clubs revealed real ability and talent among the students, several of whom were in the experimental classes. The last two nights on which the chapel was available (there was another group at Clemson at this time), the students of the sewing class presented a style show and the boys of the declamation class a series of classic speeches. The girls wore the cotton dresses they had made and gave short reports on how they were made and their cost. The boys were stimulated in their work in public speaking by opportunity to preside at public meetings of the school, to make motions, and to introduce speakers.

Through the courtesy of the authorities of the Yale University Press, their Chronicles of America Photoplays were loaned to the Opportunity School. They were presented on every school night for twelve nights. Attendance was required of all students. These pictures served a very valuable purpose inasmuch as they provided the only instruction given, formal or informal, in United States history. In order to emphasize the importance of the incidents that had been presented, or were to be presented that evening, classes spent some time daily in discussion or preparation. On Monday morning each class was given a test on the Chronicles to be shown that week. When the pictures were flashed on the screen the pupils were able to make a mental check on the accuracy of their test reports. When the tests were presented for the second time on Saturday morning, each student was able to correct previous mistakes and to show progress. (It has not been possible to analyze the results of the testing in time for this report. They will be published later by J. W. Tilton and Mrs. Arney Childs.) The Chronicles proved to be quite as popular with the experimental group as with the advanced groups, and although the former were requested to absent themselves on several evenings, they refused to forego the treat. For the benefit of those who could not read, the text of the pictures was read aloud slowly and clearly and the pictures were held long enough for each student to relate the reading and the action. These pictures were also correlated with English, civics, geography, spelling, reading, and composition.

Training Through Student Participation in Government

Friction at the Opportunity Schools was negligible, except on one or two occasions. This fact may be attributed mainly to two or three factors. Effort was made to develop positive attitudes and habits rather than restraints through "Don'ts." The daily schedule was at first the only printed regulation. However, several rules were worked out by the students themselves as the days passed and the boys and girls became more friendly. The attitude of helpfulness and understanding on the part of the teachers rather than one of faultfinding soon gained the confidence and co-operation of the students. The fifty-five former students in attendance served as a leaven. Their influence was generally on the right side. In order to develop within the students an idea of personal responsibility in the conduct of affairs, the school's previous plan of student government was continued.

As soon as classes met regularly, one period was devoted to perfecting class organizations. This gave opportunity for parliamentary procedure, the discussion of the qualifications of each officer needed, and speech making by the nominees. Three officers were elected, a president, a vice-president, and a secretary-treasurer. The fourteen class organizations gave students much opportunity to discuss problems pertaining to their own welfare. They chose names and mottoes, adopted class policies, selected favorite poems, and voted on class compositions to be submitted to the school newspaper for publication.

In order to increase the feeling of personal responsibility for the school, a student council, consisting of the presidents and secretaries of the fourteen sections and four faculty advisors was formed. This group, made up of exceptionally fine young people, perfected their organization and endeavored to conduct their meetings in true parliamentary fashion. Sometimes the meetings were held indoors and sometimes under the trees. Questions relating to conduct and homemaking came up for discussion and settlement. Examples follow: Relations between girls and boys. Shall students be permitted to carry on conversations from their dormitory windows? Is it proper to throw water from windows? What constitutes unnecessary noise after the light bell? The decisions of the council were accepted without objections. This was true not only of the members of the council but also of the student body as a whole.

Results at Clemson

Although the results of the informal training were not determined with objective tests, its value soon became apparent in terms of greater courtesy, increased personal cleanliness, and improved group relations. After the close of the Opportunity School a letter of inquiry was sent to all Clemson students. At the time this summary was prepared, one hundred forty-one replies had been received. Thirty-eight had been sent in by the experimental group (65 per cent of it), forty by the intermediate group (55 per cent of it), and sixty-three by the advanced group (61 per cent of it). These reports showed with very few exceptions that the students had been greatly helped and inspired. They supplied evidence of the fact that many who had done somewhat poorly in formal classroom work had profited greatly from the informal training. By actual count reference was made as frequently to the results of the out-of-class instruction as to those of the more formal work. Always the goal of the Opportunity School has been better citizenship and happier individuals, as well as the mastery of the three R's and progress in other subjects. Although major emphasis this year was on formal instruction, the results of the informal training were very gratifying.

The Seneca Program

The out-of-class program at Seneca duplicated the one at Clemson in all essential features except two. These were the chapel exercises and the use of moving pictures. Outside lecturers, both white and colored, brought helpful messages during the vesper hour, but the morning chapel was conducted almost entirely by the students themselves. Each teacher acted as chairman for the chapel hour for one week. During this hour the students gave expression to praise and thanksgiving through spirituals as only the colored race can. To their devotional service they added recitations, readings from textbooks and newspapers, and current events. Due to lack of equipment, it was not possible to have moving pictures in the school. This omission, however, was partly overcome by the manager of the local theatre, who invited the students to be his guests every Saturday afternoon. Many had never seen a silent picture and none a talkie, so the movie privileges proved a source of information as well as entertainment.

Very little time was given to active play for two reasons. First, the

Seneca students were older than the Clemson students and preferred to sit and watch rather than participate. Second, the facilities were fewer. However, tennis and baseball were played by the younger members. Many of the students were regularly employed as cooks. For this reason, lessons were often given during free periods by the Seneca Director on how to buy foodstuffs reasonably, how to serve a balanced meal, and how to prepare certain dishes. By request the recipes were mimeographed and distributed to the school.

Commencement at Seneca was a demonstration of the progress made during the term. The program was introduced by a dialogue between two students, one complaining about being jobless and unprepared and the other inviting him to come to the adult school to see what could be done to remedy conditions. They visited the school where they saw and heard students read, write on the board, spell, read poems they had learned, and give short informal talks on civic ideas they had acquired. A unique feature was the Story of My Race developed into booklet form and given by some of the advanced students—the third grade—as their contribution to the program. This was a very illuminating part of the program which was concluded by a farewell group of spirituals. Every one, white and colored, left Seneca Institute with a feeling of satisfaction over the accomplishments of the term.

VI

Results of Instruction

On the last two days of the term, the battery of tests used in the initial study of achievement was repeated in order to determine the progress which had been made. Either a different form was used or the same form repeated, of each group test given to the experimental classes. The progress made by the students during the term, as shown by the test records, will be discussed in the sections of the chapter that follow. Reference will also be made to some of the results achieved which were not measured by standardized tests.

Average Progress of the Various Groups

The average gain in achievement during the month is presented in Table VIII. The unit of measurement used in expressing the gains in achievement is the normal progress made by children during one school month. The entries in the table should be read from left to right as follows: The Seneca Experimental Group, Class 1B, of which there were eleven students for whom gains were reported, made no measurable progress in oral reading, .6 of a month of progress in silent reading, 2.9 months of progress in handwriting, .9 of a month of progress in arithmetic, 1.2 months of progress in spelling, and an average gain of 1.1 months in all but oral reading. The average gain in each subject for all of the classes in each group is shown to the right of the phrase "group average" in each section of the table. Thus the average gain in oral reading for the 5 classes in the Seneca experimental group was 4.4 months. The same group made a total average gain of 3.9 months, the Clemson experimental group a corresponding gain of 4.9 months, the Clemson intermediate group a gain of 8.3 months, and the Clemson advanced group a gain of 9.7. It is obvious that, in general, progress was greater in the higher sections than the lower and that it was greater in some subjects than in others.

TABLE VIII. GAINS[1] BY GROUPS AND BY CLASSES IN TERMS OF THE NORMAL PROGRESS MADE BY CHILDREN IN ONE SCHOOL MONTH
(No correction for Practice Effect)

Group	Class	No. for Whom Gains are Reported	Language	Literature	History	Geography	Physiology	Oral Reading	Silent Reading	Writing	Arithmetic	Spelling	Composite of last four
Seneca Exp.....	IB	11	..	..	..	..	..	0.0	0.6	2.9	0.9	1.2	1.1
" "	IA	7	..	..	..	..	..	4.1	5.4	6.4	3.7	6.0	5.3
" "	2	9	..	..	..	..	..	3.9	2.9	12.4	3.6	4.6	5.3
" "	3	10	..	..	..	..	..	5.9	0.7	7.7	3.4	7.9	4.1
" "	4	10	..	..	..	..	..	8.6	3.8	9.5	5.6	3.6	4.6
Total S. Exp.....	..	47	..	..	..	..	..	..	..	..	..	..	..
Group Average...	..	..	..	..	..	..	..	4.4	2.5	7.7	3.4	4.5	3.9
Clemson Exp....	1	12	..	..	..	..	..	0.3	1.5	4.4	4.9	2.4	3.0
" "	2	13	..	..	..	..	..	0.7	2.2	12.3	2.8	2.5	4.3
" "	3	8	..	..	..	..	..	5.6	7.5	8.9	8.5	3.6	7.0
" "	4	14	..	..	..	..	..	6.4	4.8	10.1	7.3	0.4	5.8
Total C. Exp.....	..	47	..	..	..	..	..	..	..	..	..	..	..
Group Average...	..	..	..	..	..	..	..	3.4	3.7	9.1	5.7	2.0	4.9
Clemson Int.	5	15	..	..	..	..	..	2.7	9.1	9.1	7.6	4.9	7.9
" "	6	15	3.7	8.0	5.2	9.3	8.7	4.9	6.1	8.7	7.9	4.0	6.6
" "	7	17	3.5	5.2	1.8	5.5	3.2	8.2	7.1	9.9	8.2	10.3	8.7
" "	8	18	−2.8	1.1	3.3	4.1	−2.6	8.7	7.3	13.8	11.9	8.3	9.8
Total Int.....	..	65	..	..	..	..	..	..	..	..	..	..	..
Group Average...	..	..	0.9	3.1	2.8	5.7	1.5	6.3	7.4	10.5	9.0	7.1	8.3
Clemson Adv....	9	14	21.2	3.0	5.2	17.6	8.6	11.3	9.3	1.9	13.9	10.4	8.4
" "	10	19	17.4	3.3	6.8	5.5	4.1	8.2	8.3	1.6	20.3	8.2	9.3
" "	11	20	9.7	1.2	4.5	8.6	−5.5	7.2	8.3	8.0	24.8	10.9	12.0
" "	12	11	6.0	8.1	12.5	5.4	−4.6	0.8	7.5	1.1	17.9	11.1	9.1
" "	13	18	3.9	10.4	12.7	8.2	3.1	3.2	5.9	7.9	13.8	8.6	8.3
" "	14	12	2.8	5.9	7.0	2.9	8.1	2.3	5.3	9.5	18.8	14.7	10.8
Total Adv.....	..	94	..	..	..	..	..	..	..	..	..	..	..
Group Average...	..	..	10.5	5.1	7.9	8.2	3.1	5.2	7.5	5.2	18.5	10.3	9.7

[1] The gains in the last five columns, with the exception of writing and spelling in the Intermediate and Advanced groups are the averages of two computations, the first being the gain made from the first testing at the beginning of the term to the first testing at the end and the second being the gain from second testing to second testing. The other gains are from the single initial test to the single final test.

Before any conclusions can be drawn from the gains recorded in Table VIII, it will be necessary to determine the extent to which dependence can be placed on them. Constant errors, chance errors of measurement, and errors of sampling will be considered in order.

Constant Errors

Practice effect certainly merits consideration. Are the gains reported the result of the month's teaching and study or are the final scores higher than the initial scores only to the extent that taking the initial tests helped in taking the final tests?

As a basis for determining the answer to this question, average scores on successive testings are shown in Table IX. The tests used were given in various orders, partly through design and in part through necessity. Six orders of testing were followed: form 1 four times, form 1 three times with form 2 last, form 1 three times with form 2 third, form 1 three times with form 2 third and form 3 fifth, form 1 first with form 2 second and third and form 3 fourth, and finally forms 1 to 4 in order on four successive testings. The average scores made by the different groups on the various tests according to these six arrangements are shown in Table IX.

The most obvious source of error revealed by the table relates to the fact that the score made upon a second testing with the same form increased decidedly. The first horizontal line in the table gives the facts for the addition test, the same form of which was used four times. The increase was equal to a normal gain of three months between the morning and afternoon tests on the first day, to a gain of one month between the afternoon test of the first day and the morning test of the last day, and to a gain of three months between the morning and afternoon tests on the last day. These findings indicate that the teaching during the month was not equal in its influence upon the group score to the advantage of having taken the test a few hours previously. It may be argued, of course, that there was some gain during the course of the month, that the practice effect of the first testing was quickly lost, and that the third score would have been as low as the first had it not been for the intervening instruction and practice in arithmetic.

In view of the fact, however, that such investigators as Psyche Cattell and F. J. Gaudet[1] have noted practice effect on a group test that persisted a year, one is forced to conclude that there was little, if any, gain from the month's teaching as far as addition in the lower classes is concerned.

[1] Psyche Cattell and F. J. Gaudet, "The Inconstancy of the I. Q. as measured by Repeated Group Tests." Journal Educational Research, 21:21–28.

TABLE IX. AVERAGE SCORES ON SUCCESSIVE TESTING[1] ARRANGED FOR THE STUDY OF PRACTICE EFFECT

Kind of Test	Number Tested	Group	1st	Initial	2nd	Initial	3rd	Initial	1st	Final	2nd	Final
Compass—Addition	56	Exp.	(1)	2.9	(1)	3.2	..	..	(1)	3.3	(1)	3.6
Compass—Subtraction	56	"	(1)	2.8	(1)	2.9	..	..	(1)	3.2	(1)	3.3
New Stanford—Reading	59	Int.	(1)	5.2	(1)	5.6	..	..	(1)	6.4	(2)	5.8
New Stanford—Arithmetic	59	"	(1)	5.4	(1)	5.3	..	..	(1)	6.4	(2)	6.1
New Stanford—Reading	90	Adv.	(1)	8.0	(1)	8.5	..	..	(1)	9.3	(2)	8.6
New Stanford—Arithmetic	90	"	(1)	6.7	(1)	7.1	..	..	(1)	8.8	(2)	8.6
Gates Word Recognition	44	Exp.	(1)	1.7	(1)	1.8	..	..	(2)	2.0	(1)	2.1
Gates Word Phrase and Sentence	44	"	(1)	1.6	(1)	1.8	..	..	(2)	1.8	(1)	2.2
Gates Paragraph Meaning	44	"	(1)	1.6	(1)	1.7	..	..	(2)	1.8	(1)	1.8
New Stanford—Par. Meaning	12	Exp.	(1)	3.2	(1)	3.5	(2)	3.2	(1)	4.4	(3)	3.9
New Stanford—Word Meaning	12	"	(1)	3.2	(1)	3.4	(2)	3.0	(1)	4.4	(3)	3.6
New Stanford—Arith. reasoning	12	"	(1)	4.1	(1)	4.3	(2)	4.1	(1)	5.3	(3)	4.4
New Stanford—Arith. computation	12	"	(1)	3.6	(1)	3.8	(2)	3.2	(1)	4.2	(3)	4.1
Monroe—Reading rate	107	Int. & Adv.	(1)	4.1	(2)	4.9	..	..	(2)	5.7	(3)	5.2
Monroe—Reading comprehension	107	" "	(1)	4.9	(2)	5.5	..	..	(2)	6.4	(3)	5.9
Thorndike—writing	51	Exp.	(1)	2.0	(2)	1.9	..	..	(3)	2.9	(4)	2.7
Morrison McCall—spelling	51	"	(1)	1.7	(2)	1.7	..	..	(3)	2.1	(4)	1.9

[1] The form used is indicated in parentheses. In the case of the New Stanford tests, Form 1 is V, form 2 is W, form 3 is form X. The unit = 1 grade, the tenths being equal to months.

A further inspection of Table IX shows that fourteen times out of fifteen the repetition of a form on the same day raised the test score. The only exception was in all probability due to an error in giving the test, such as a change in time allottment. This opinion is supported by facts relating to the administration of the test in question. The group was divided for the retest, some being sent to one room under one examiner and some to another room under a second examiner. Suppose we call the rooms A and B, and the four sections into which the group was later classified, 1, 2, 3, and 4. It was found that in the case of class 1, two of seventeen were tested in A and the rest in B; of class 2, six of fourteen were tested in A and the rest in B; of class 3, nine of fifteen were tested in A and the rest in B; and of class 4, twelve of thirteen were tested in A and the rest in B. The change in score from the first test to the second was equal to a gain of 1.3 months for class 1, to a loss of .4 of a month for class 2, to a loss of 1.8 months for class 3, and to a loss of 2.4 months for class 4. The absence of practice effect for the four classes combined seems therefore to have been associated with testing conditions in room A. At any rate, practice effect as a result of the repetition of a form was the rule. The average increase effected in this manner for the 14 cases, was 2.4 months. This is an appreciable source of error in an effort to measure one month's progress.

On the other hand practice effect, as measured by the influence of one form of a test upon a second form, seems not to have been an appreciable item. Of the twenty cases in Table IX where the retest was made with a form not previously used, there is an increased score on the retest in only two. In these cases the Monroe Silent Reading Test was used. The time for this test is only four minutes. The student marks the last line read at the end of the test period. This probably has a tendency to increase the speed of reading during the second test. The fact that the rate score is increased eight months while the comprehension score is increased only six months supports this opinion. At any rate, in taking this test there was a large practice effect from form one to form two. No evidence of such effect was found in the case of the longer tests in which speed was not so important a factor. Even in the case of the Monroe test, the score on form 3 was less than the score on form 2 which had been given just before. These findings agree in general with those of Cattell and Gaudet referred to

above. Foran[1] reports for the Morrison McCall Spelling Scale a small practice effect from one form to another and a large one from a repetition of the same form.

Fairly accurate standardization of the tests used has been assumed,[2] and other causes looked for in explaining different results from the use of two forms of the same text. For example, the difference of two months between the second form score and the first form score, in the case of Stanford Word Meaning, and the difference of four months between the same forms in computation, are thought to be either the effect of administrative irregularity, since the tests were administered by different examiners, or the effect of fatigue since one comes last in reading and the other last in arithmetic. The lower scores on the second tests in writing and spelling are attributed to fatigue, since the writing and spelling scores for the experimental group were both taken from two consecutive fifty-word spelling dictations.

In general, the excellent attitude toward the tests, mentioned in the description of the initial testing program, continued throughout the experiment. The students were anxious to make a good showing for themselves, for their teachers, and for the school. There was no evidence, therefore, of a general reduction of effort. With the exceptions already noted, all cases in which a second score was lower than a first are cases in which the first test was a familiar one and the second test was a form not previously administered. Furthermore, there is small likelihood of appreciable constant errors in scoring. It was done carefully under capable supervision and later checked.

Practice effect from repeated use of the same form remains the only known source of constant error. Attention is therefore again directed to Table IX. What do the entries in the table indicate as to the extent to which gains computed as in Table VIII (by averaging the gain from test one to test three and the gain from test two to test four) may be accepted as a true measure of the results of the month's instruction? In Compass addition they may not be accepted at all. The one to three and two to four measure is probably a measure of practice effect only, the error being four months. In Compass subtraction, the increase during the month is three months, while the average practice

[1] T. G. Foran, "A Note on Methods of Measuring Reliability," Journal Educational Psychology, 22: 383–387 (May, 1931).

[2] It is not assumed that any forms are exactly equal in difficulty, but that the error introduced is small, sometimes in one direction, sometimes the other, and therefore minimized in the composite result.

effect is one month. After deducting one month as the probable practice effect, there remains a gain of two months which may be attributed to instruction. The one to three and two to four gain, which equals four months, is according to the line of reasoning adopted, in error by an excess of two months.

It is proposed to go through Table IX in this fashion, and to estimate for each test the extent to which the gains in Table VIII are in error. The principles upon which the estimates will be based follow from the conclusion that practice effect from one form to another was not appreciable. Since the adults did not do better on a second test when the form was changed, it may be inferred that when the same form was used the practice effect was not due to learning how to take the test, but was due to the memorization of parts of the repeated test. That being the case, the score on the first test taken was a satisfactory initial test score. It was neither too low because of the strangeness of being tested, nor too high because of familiarity with the test. The final test score to compare with it is the one from a form not previously used, for such scores seem to have been practically unaffected by previous testing. The difference between such an initial score and such a final score is a measure of gain least affected by practice effect.

Inspection of Table IX may now be continued in the light of the above guiding principles. For rows three to six inclusive, the best estimate of the gains due to instruction is the increase between the first and last testing, for reasons presented above. These gains are 6, 7, 6, and 19 months. But the average one to three and two to four gains for these rows are 7, 9, 7, and 18 months. Therefore, the one to three and two to four gains are respectively too high by 1, 2, and 1 month and too low by one month. For the three Gates tests, the gain from the first to the third testing is the best estimate. The average of the one to three and two to four gains is by this estimate correct in the first case, too high in the second by one month, and too low in the third by one-half of a month. In computing Table VIII gains for the small group tested five times the average of the first two testings was considered the best. The one to three and two to four gains by this method are 9, 9, 7, and 7 months. The best estimates of the true instructional gain are taken to be the increases from the first to the last score, namely, 7, 4, 3, and 5 months. The former computations are, by this estimate, in excess by 2, 5, 4, and 2 months. The Monroe

results were not included in Table VIII. The average of the one to three and two to four gains for writing and spelling is as good an estimate of instructional gain as can be made. Likewise, for the same reasons, it is inferred that such gains as were computed from a single initial and a single final score are not appreciably in error because of practice effect. The needed corrections as determined by the foregoing considerations are shown in Table X.

TABLE X. CORRECTIONS FOR PRACTICE EFFECT ERRORS IN TABLE VIII

Subject	Groups and Classes	Corrections in terms of Months
Reading	C 1–3 and S 1–4	1.0
Reading	C 4	−3.0
Reading	C 5–14	−1.0
Arithmetic	C and S 1–3	−3.0
Arithmetic	C 4	−3.5
Arithmetic	S 4	0.0
Arithmetic	C 5–8	−2.0
Arithmetic	C 9–14	1.0
RWAS Composite	C and S 1–3	−0.6
RWAS Composite	C 4	−2.0
RWAS Composite	S 4	0.0
RWAS Composite	C 5–8	−0.8
RWAS Composite	C 9–14	−0.2

Corrected Gains Made by Various Groups

The corrections recorded in Table X were applied to the gains reported in Table VIII. The corrected gains appear in Table XI. The entries in the table report the gains made by the various groups as accurately as they can be calculated in this study. They show that the Seneca experimental group made an average gain equivalent to 3.4 months of public school progress in silent reading, writing, arithmetic and spelling and that the Clemson experimental group made an average gain of 3.9 months in the same subjects. The Seneca group made superior progress in oral reading and spelling. The Clemson group did better in silent reading, writing and arithmetic. Both groups made far greater gains in writing than in any other subject. The Seneca group made least progress in arithmetic and the Clemson group in spelling. An examination of the average scores made by the various classes in different subjects reveals surprising variations which

are doubtless due in part to differences in emphasis on various phases of the work.

TABLE XI. GAINS REPORTED IN TABLE VIII CORRECTED FOR PRACTICE EFFECT[1]

Group	Class	No. Students whose Gains are Reported	Language	Literature	History	Geography	Physiology	Oral Reading	Silent Reading	Writing	Arithmetic	Spelling	Composite of last four
Seneca Exp.	IB	11	..	..	..	..	..	0.0	0.6	2.9	−2.1	1.2	0.5
" "	IA	7	..	..	..	..	..	4.1	5.4	6.4	0.7	6.0	4.7
" "	2	9	..	..	..	..	..	3.9	2.9	12.4	0.6	4.6	4.7
" "	3	10	..	..	..	..	..	5.9	0.7	7.7	0.4	7.9	3.5
" "	4	10	..	..	..	..	..	8.6	3.8	9.5	5.6	3.6	4.6
Total S. Exp.	..	47	..	..	..	..	..	..	..	..	..	..	..
Group Average	..	..	..	..	..	..	..	4.4	2.5	7.7	1.0	4.5	3.4
Clemson Exp.	1	12	..	..	..	..	..	0.3	1.5	4.4	1.9	2.4	2.4
" "	2	13	..	..	..	..	..	0.7	2.2	12.3	−0.2	2.5	3.7
" "	3	8	..	..	..	..	..	5.6	7.5	8.9	5.5	3.6	6.4
" "	4	14	..	..	..	..	..	6.4	1.8	10.1	3.8	0.4	3.8
Total C. Exp.	..	47	..	..	..	..	..	..	..	..	..	..	..
Group Average	..	..	..	..	..	..	..	3.4	2.8	9.1	2.5	2.0	3.9
Clemson Int.	5	15	..	..	..	..	..	2.7	8.1	9.1	5.6	4.9	7.1
" "	6	15	3.7	8.0	5.2	9.3	8.7	4.9	5.1	8.7	5.9	4.0	5.8
" "	7	17	3.5	5.2	1.8	5.5	3.2	8.2	6.1	9.9	6.2	10.3	7.9
" "	8	18	−2.8	1.1	3.3	4.1	−2.6	8.7	6.3	13.8	9.9	8.3	9.0
Total Int.	..	65	..	..	..	..	..	..	..	..	..	..	..
Group Average	..	..	0.9	3.1	2.8	5.7	1.5	6.3	6.7	10.5	7.0	7.1	7.5
Clemson Adv.	9	14	21.2	3.0	5.2	17.6	8.6	11.3	8.3	1.9	14.9	10.4	8.2
" "	10	19	17.4	3.3	6.8	5.5	4.1	8.2	7.3	1.6	21.3	8.2	9.1
" "	11	20	9.7	1.2	4.5	8.6	−5.5	7.2	7.3	8.0	25.8	10.9	11.8
" "	12	11	6.0	8.1	12.5	5.4	−4.6	0.8	6.5	1.1	18.9	11.1	8.9
" "	13	18	3.9	10.4	12.7	8.2	3.1	3.2	4.9	7.9	14.8	8.6	8.1
" "	14	12	2.8	5.9	7.0	2.9	8.1	2.3	4.3	9.5	19.8	14.7	10.6
Total Adv.	..	94	..	..	..	..	..	..	..	..	..	..	..
Group Average	..	..	10.5	5.1	7.9	8.2	3.1	5.2	6.5	5.2	19.5	10.3	9.5

[1] The oral reading gains are not corrected, but are repeated here for the convenience of the reader. The fact that they include practice effort should be remembered when comparing oral and silent reading gains.

The average gain of the Clemson intermediate group in silent reading, writing, arithmetic and spelling was 7.5 months and in oral reading 6.3 months. The average gains in language, literature, history,

geography and physiology were much less in most cases. This may be explained largely by the fact that instruction in the latter fields was far more incidental and was greatly handicapped because of lack of appropriate teaching materials. The average gains for the Clemson advanced group were distinctly superior to those made by the intermediate groups. The progress in arithmetic in all classes was notable. The unusual gain achieved in some of the classes in language, in literature, in history, or in geography is due to the fact that the subjects or fields involved were emphasized vigorously in teaching.

The average gains achieved were very gratifying in most respects. They showed clearly that students, particularly those in the intermediate and advanced groups, made notable progress during the Opportunity School term. Before attempting any further evaluation of the results achieved, it will be necessary to consider further their reliability and to study the gains made by individuals.

Chance Errors of Measurement

The reliability of the gains for the experimental groups is described in Table XII. The chance errors of measurement in the one to three and two to four gains are small so that group gains of over two months

TABLE XII. RELIABILITY OF THE GAINS FOR THE EXPERIMENTAL GROUPS
(The Unit = 1 month)

	Clemson					Seneca				
	Reading	Writing	Arithmetic	Spelling	RWAS Comp.	Reading	Writing	Arithmetic	Spelling	RWAS Comp.
Correlation between Gains 1 and 2	.324	.729	.526	.163	.547	.433	.708	.649	.314	.531
Reliability coefficient for average of gain 1 and gain 2	.49	.84	.69	.28	.71	.60	.83	.79	.48	.69
S.D. of gains	3.4	10.0	5.5	3.3	3.4	3.1	8.2	3.1	4.1	3.0
P.E. of a gain[1]	1.6	2.7	2.1	1.9	1.2	1.3	2.2	1.0	2.0	1.0
P.E. of mean gain[2] N 47	.2	.4	.3	.3	.2	.2	.3	.1	.3	.2

[1] P.E. of a gain .6745 S.D. gains $\sqrt{1\text{-}r\ g,\ g2}$

[2] P.E. of a mean gain $\frac{\text{P.E. of a gain}}{\sqrt{N}}$

in Table VIII may not be attributed to such errors. The errors in the corrections for practice effect are larger, that for reading in the case of the Clemson group being approximately .4 of a month. Reference to the table of corrections should be made before attaching any significance to the relative size of two gains. Aside from the influence of practice effect, differences of two months within or between experimental groups may be considered as statistically significant. Differences of four months within or between single classes may also be considered as established with a high degree of certainty.

Errors of Sampling

The probable errors of sampling[1] in reading, writing, arithmetic, spelling, and composite gains are: for the Clemson experimental group, .3, 1.0, .5, .3, and .3 months; and for the Seneca experimental group, .3, .8, .3, .4, and .3 months respectively. For writing in which the error is largest, this means that the results for similar groups, similarly selected and taught, might be expected to agree, 99 times out of 100, with the obtained result within a margin of four months of gain. For the four subjects combined, the chances would be equally as good for verification of the progress of the experimental group within a range of gains equal to 1.2 months.

Caution in Interpretation

However, let it be said immediately that the small probable errors of sampling may easily be interpreted as attaching more general significance to the findings than they deserve. The above statement does not mean, for instance, that the results would be duplicated with any group of practically illiterate South Carolina adults. The groups were not random selections from the state's illiterates. Consider the Clemson group. Two-thirds of the students came from seven of the forty-six counties of the state, and one-third came from the cities of Columbia, Greenville, and Anderson. In these seven counties there are located[2] only one-third of the state's illiterates. The students

[1] $\text{P.E. of sampling} = \frac{\text{P.E. gains}}{\sqrt{N}}$

[2] This statement is based upon 1920 population figures presented by J. H. Hope and Wil Lou Gray in a South Carolina State Bulletin entitled "Night and Adult Schools" and issued in 1930. Reports for 1930 indicate no marked changes in the geography of the state's illiteracy problem.

were drawn from sections of the state in which most adult education work has been done because the adult education workers were the most influential recruiting agents.

One might argue that with adults from other sections less could have been accomplished because night schools have not paved the way. Or one might argue that more could have been accomplished because in other sections there are relatively more people who have ability but have lacked opportunity.

It is not proposed to argue the question, but rather to point out that factors not covered by the formula for the probable error of sampling have a bearing upon the generality of the results reported in this study. For example, there are various facts and conditions with respect to teaching that affect the results in another school such as differences in emphasis, time allotments, teaching efficiency, and availability of materials suitable for the group.

The reader is therefore cautioned against accepting the reliability with which progress was measured as a justification for generalization. The progress described here may be thought of as typical only to the extent that similarity of conditions justifies the inference.

One comparison which certainly should be made, and which the hours of instruction involved will permit, is between the results of an Opportunity School such as the one being described, and the results of a winter's program of adult education. The advantages of the Opportunity School and the difficulty of working and going to school at the same time are obvious, but on the other hand a strong case could be made for the superiority of the same effort spread over the entire year. The distributed learning might be expected to be more effective, and from the facts of transfer, it might be expected that practice would be more effective under the conditions in which the learning is supposed to function. The present experiment was not set up to answer this important question.

It happened, however, that twenty people whose progress in the 1931 Opportunity School was measured were tested at the beginning of the 1930 Opportunity School. The average grade scores on the three occasions (beginning of the 1930 school, beginning and end of the 1931 school) were 6.1, 6.3, and 7.1.[1] These averages suggest that

[1] $\text{P.E.} = \frac{\text{P.E. dist.}\sqrt{1-r}}{\sqrt{N}}$ = approximately .5 of a month or .05 of a grade.

the 1930 Opportunity School did not make much of a net contribution to the elementary school knowledge of these twenty students. Perhaps it shouldn't be expected to at this grade level. One would not expect the students to learn much spelling, for instance, on their own initiative. In reading alone, the averages for the twenty were 6.8, 7.2, and 7.8. But since the 1930 Opportunity School progress was not measured, these figures do little more than suggest such questions as "How much of the Opportunity School progress was retained?" "Would an equal effort at adult education throughout the year be more or less productive?" "How much more effective would it be to combine an Opportunity School with follow-up work through the winter than to provide either type of education alone?"

These questions are very pertinent when one considers the value of the Opportunity School work at various levels. Omitting from consideration such values as were not measured objectively, how valuable is a gain of three months of schooling to those in grades one to four? To ask this question is in no sense to minimize the very creditable achievement of securing, among adults who are below the average in ability, three or more months of progress in one. It is simply to emphasize the fact that the value of the achievement depends upon the extent to which it persists and is followed by further progress.

As a final caution pertaining to the evaluation or interpretation of the results reported in this section, it is here pointed out that the gains described represent only a part of the month's accomplishments. The previous chapter and later sections of this chapter suggest results which were not measured, but of the significance of which the investigators were nevertheless convinced.

Even in the realm of fact and skill, the gains reported are incomplete measures of progress because the tests used were planned to fit public school courses of study. Tests built to fit the objectives of adult elementary education would have more adequately measured the progress made. This fact may be illustrated in the case of reading. William S. Gray constructed an oral reading test based upon the vocabulary used in the basal reader prepared by Wil Lou Gray and Erin Kohn for use in the experimental groups. The test was made in four sections, each containing twenty words carefully selected from the vocabulary to be measured. The test was given to the two lowest classes in each experimental group and proved to be a very reliable measure. For the twenty-nine students who read two or more sec-

tions, the score[1] on section 1 was found to correlate with that on section 2 to the extent of .83 which means a reliability coefficient of .91 for a score on two sections. The use of reliable tests like this, carefully made to fit the instruction to be measured, furnishes information not otherwise obtainable. For example, the teachers' records indicated that Seneca classes 1B and 1A and Clemson classes 1 and 2 had been taught 106, 225, 233, and 338 words respectively. The tests showed the percentage of the vocabulary in the test that was mastered. Assuming then that the whole vocabulary taught was mastered to the same extent, the four classes could recognize and pronounce 63, 216, 151, and 209 of the words taught during the month.

Other things being equal, it is always desirable to use tests which relate closely to the content of instruction. On the other hand, the inadequacy of standardized tests in a given situation is often exaggerated. In the case just described, the correlation between the scores on the oral reading test made for the purpose and the scores on the Gates silent reading tests were positively correlated to the extent of .72 corrected for attenuation. The Gates tests were the only tests concerning the adequacy of which any of the teachers expressed doubt. In view of this high correlation, however, it would seem as though the tests measured most of the progress made.

Progress of Individuals

The discussion thus far has related to the progress made by groups of students and to the reliability of such records. This section is concerned with the progress made by individuals and with variations in individual progress. Individual records for those in the Clemson experimental group are shown in Table XIII, and for those in the Seneca experimental group in Table XIV. These tables should be read as follows: Student No. 1 in Clemson Class I was 39 years old, a man, who did not get beyond the first grade in school. On the Myers and Pintner intelligence tests he scored 30 and 217 respectively. On the initial oral reading test his achievement was similar to that of children just beginning the first grade, and he made practically no progress during the month. In silent reading his initial achievement was similar to that of children who have advanced four months in the first

[1] For the computation of a reliability coefficient, the test was scored by giving approximately equal weight to the number of words read correctly and the rate of reading the section.

TABLE XIII. INDIVIDUAL SCORES FOR THE CLEMSON EXPERIMENTAL GROUP

Class No.	Serial No.	Age	Sex	Grade	Myers Score	Pintner Score	Oral Reading Initial Grade Score	Oral Reading Gain in Months	Silent Reading Initial Grade Score	Silent Reading Gain in Months	Writing Initial Grade Score	Writing Gain in Months	Arithmetic Initial Grade Score	Arithmetic Gain in Months	Spelling Initial Grade Score	Spelling Gain in Months	Composite Initial Grade Score	Composite Gain in Months
I	1	39	M	1	30	217	1.0	0	1.4	1	1.1	4	3.0	3	1.0	4	1.6	2
	2	31	M	1	39	343	1.0	0	1.3	2	1.4	19	4.2	18	1.0	2	1.8	9
	3	21	F	2	28	178	1.0	0	1.1	4	4.6	10	2.8	4	1.5	1	2.2	1
	4	19	F	2	9	53	1.0	0	1.4	−3	1.0	2	2.3	1	1.0	3	1.4	1
	5	17	F	0	27	136	1.0	0	1.7	−3	1.0	2	2.3	4	1.0	2	1.6	0
	6	18	M	1	11	84	1.0	0	1.3	−1	1.0	1	2.3	0	1.0	0	1.4	0
	7	18	M	2	58	453	1.0	4	2.1	1	3.0	13	5.2	17	2.1	0	2.9	6
	8	21	M	1	36	244	1.0	0	1.2	3	1.7	−1	4.0	0	1.3	2	1.9	1
	9	25	F	..	31	22	1.0	0	1.4	3	1.0	6	2.3	4	1.0	5	1.4	5
	10	18	M	3	50	350	1.0	0	1.5	7	1.5	15	3.7	8	1.0	7	1.9	9
	11	18	F	0	17	43	1.0	0	1.1	2	1.0	2	2.7	1	1.0	3	1.4	2
	12	32	M	0	25	54	1.0	0	1.3	2	1.0	0	2.4	−1	1.0	0	1.4	0
II	1	18	M	1	36	207	1.0	0	1.5	1	1.3	4	2.9	5	1.3	2	1.7	3
	2	17	M	1	16	209	1.0	0	2.0	−6	1.0	1	2.5	1	1.0	0	1.7	−2
	3	32	M	1	31	112	..	..	1.3	2	1.1	5	3.1	6	1.0	3	1.6	3
	4	16	F	2	38	201	1.0	0	1.9	3	2.8	21	3.3	−1	1.9	1	2.4	5
	5	18	M	2	37	198	1.0	6	1.8	3	2.9	39	2.9	8	2.1	2	2.3	11
	6	31	M	2	43	212	1.0	0	1.1	5	1.0	2	3.2	6	1.0	2	1.5	4
	7	18	M	2	23	106	1.0	0	1.7	5	2.2	20	2.6	4	1.9	2	2.0	7
	8	15	M	3	25	214	1.0	0	1.5	1	1.9	9	3.5	4	1.6	1	2.0	3
	9	..	M	..	40	324	1.0	0	1.4	1	1.2	0	2.9	4	1.0	0	1.6	1
	10	40	M	1	33	160	..	..	2.3	−1	1.3	0	3.0	0	1.0	7	2.0	1
	11	15	F	1	41	71	..	..	1.3	5	5.5	17	2.6	2	1.3	3	2.4	6
	12	18	M	0	28	161	1.0	0	1.3	7	1.2	16	2.4	3	1.2	9	1.5	9
	13	37	M	0	57	361	..	..	2.1	2	1.3	26	6.5	−6	1.9	0	2.7	5
III	1	15	M	3	55	328	2.3	6	2.9	3	4.2	0	3.7	11	2.9	5	3.3	5
	2	21	M	2	60	339	1.9	10	2.8	11	2.4	16	5.1	24	2.8	5	3.2	13
	3	18	M	3	57	323	1.0	14	2.5	8	3.3	35	3.0	12	2.2	7	2.7	14
	4	21	M	4	30	300	4.0	5	3.3	5	4.2	0	4.6	7	4.3	1	3.9	4
	5	24	M	2	39	313	2.1	−2	2.7	7	4.2	0	4.8	2	4.4	0	3.7	4
	6	22	F	0	8	12	2.3	11	1.7	11	5.2	0	2.4	6	3.3	6	2.9	6
	7	19	F	4	36	291	3.1	1	3.2	10	3.5	20	4.3	−1	2.8	4	3.5	7
	8	15	M	4	30	188	2.3	0	2.4	5	6.4	0	3.8	7	2.5	1	3.5	3
IV	1	20	F	4	29	199	1.0	21	2.5	4	3.9	10	3.1	11	2.4	7	2.9	7
	2	19	F	3	39	302	2.1	3	3.2	6	5.5	0	4.3	3	4.5	−4	4.0	3
	3	27	M	2	35	233	2.9	8	2.7	8	1.7	0	3.1	1	2.9	4	2.4	7
	4	21	F	4	23	231	7.0	0	3.6	8	3.5	−5	3.3	6	5.6	1	3.8	7
	5	16	M	3	33	354	2.6	10	3.2	4	5.5	17	3.7	12	3.2	−1	3.7	6
	6	24	F	..	36	210	1.0	0	2.5	4	1.5	24	2.8	7	1.9	8	2.3	9
	7	25	M	5	35	182	4.0	4	4.0	3	2.8	7	3.7	10	4.6	3	3.8	5
	8	20	M	4	34	349	1.0	11	2.8	5	4.6	22	3.8	14	3.6	2	3.6	10
	9	17	F	3	26	29	3.4	0	2.6	4	3.0	5	2.3	2	2.4	3	2.6	3
	10	19	M	4	35	302	3.4	2	3.3	4	4.2	13	4.3	11	4.2	−3	3.8	6
	11	28	M	3	36	157	3.2	8	3.0	6	3.5	7	4.1	3	3.8	−4	3.5	3
	12	24	F	5	14	247	3.7	7	3.3	2	4.2	0	4.0	6	4.2	−6	3.7	2
	13	18	M	1	33	363	2.1	8	3.0	3	3.5	20	3.5	9	3.4	4	3.3	6
	14	17	F	4	8	74	2.9	7	2.8	6	2.0	22	2.6	7	3.2	−4	2.7	7

TABLE XIV. INDIVIDUAL SCORES FOR THE SENECA EXPERIMENTAL GROUP

Class No.	Serial No.	Age	Sex	Grade	Myers Score	Pintner Score	Oral Reading Initial Grade Score	Oral Reading Gain in Months	Silent Reading Initial Grade Score	Silent Reading Gain in Months	Writing Initial Grade Score	Writing Gain in Months	Arithmetic Initial Grade Score	Arithmetic Gain in Months	Spelling Initial Grade Score	Spelling Gain in Months	Composite Initial Grade Score	Composite Gain in Months
I	1	17	M	2	35	73	1.0	0	1.4	2	1.0	13	2.3	+1	1.0	2	1.4	4
	2	56	F	1	18	16	1.0	0	2.3	0	1.7	3	2.4	1	2.3	2	2.2	1
	3	50	F	1	..	..	1.0	0	1.0	1	1.0	3	2.3	0	1.0	2	1.2	2
	4	64	M	1	18	41	1.6	0	1.5	1	1.0	1	2.6	0	1.0	2	1.5	1
	5	60	F	3	10	10	1.0	0	1.4	4	1.0	0	2.3	0	1.2	−2	1.5	1
	6	45	M	1	5	16	1.0	0	1.3	1	1.0	0	2.4	2	1.0	0	1.4	1
	7	44	F	1	4	78	1.0	0	1.9	−2	1.0	1	2.5	−1	1.0	3	1.7	−1
	8	29	M	2	21	102	1.0	0	1.4	3	1.0	7	2.4	5	1.2	2	1.5	4
	9	46	M	1	..	..	1.0	0	1.2	−1	1.0	0	2.3	0	1.0	0	1.4	1
	10	45	F	1	4	32	1.0	0	1.2	−1	1.1	2	2.3	0	1.0	2	1.4	0
	11	31	M	..	13	82	1.0	0	1.3	−1	1.0	2	2.3	2	1.0	0	1.4	0
IA	1	39	F	..	..	..	1.6	2	1.9	0	1.0	0	2.4	1	1.5	2	1.8	0
	2	25	M	1	31	85	1.0	0	1.2	5	1.0	6	2.4	7	1.0	2	1.4	5
	3	45	F	2	..	..	1.0	8	1.2	8	1.0	2	2.3	2	1.0	17	1.4	7
	4	19	M	1	19	100	1.0	0	1.7	8	1.5	27	2.5	7	1.9	5	1.8	11
	5	50	F	1	5	23	1.9	9	1.7	1	1.2	4	2.3	1	1.7	6	1.7	3
	6	36	F	2	..	..	1.0	4	1.7	9	3.0	0	2.6	4	2.7	6	2.3	6
	7	35	M	1	13	35	1.0	6	1.4	7	1.2	6	2.4	4	2.0	4	1.7	5
II	1	18	M	2	..	..	1.0	0	1.8	1	1.7	23	2.6	2	1.9	3	2.0	6
	2	56	F	1	29	64	1.0	0	1.6	3	1.0	14	2.3	0	1.0	7	1.5	5
	3	22	F	5	10	45	2.9	11	2.8	2	2.3	32	2.6	4	2.6	12	2.5	11
	4	42	F	1	22	202	2.4	0	2.8	4	3.0	16	3.3	9	3.4	8	3.1	8
	5	40	F	2	..	..	1.0	14	2.0	2	1.1	4	2.3	2	1.5	1	1.8	2
	6	19	M	1	50	345	1.0	6	2.4	6	3.5	1	3.5	8	2.5	1	2.8	4
	7	50	F	1	28	92	1.0	4	2.8	1	1.9	6	2.7	2	2.4	2	2.5	3
	8	29	M	3	17	64	1.0	0	1.9	4	1.3	0	2.4	2	1.6	3	1.8	3
	9	30	M	1	..	..	1.0	0	1.3	3	1.1	16	2.4	3	1.2	4	1.4	6
III	1	59	M	3	26	187	2.9	16	3.7	−1	4.2	22	3.8	1	3.9	11	3.9	6
	2	34	M	1	8	89	3.1	5	2.8	1	6.0	11	3.5	6	3.7	10	3.8	1
	3	..	M	3	..	..	1.4	5	2.1	2	3.3	0	2.5	7	2.4	10	2.5	4
	4	48	F	3	..	..	2.4	13	3.3	0	4.9	0	2.9	4	3.0	6	3.5	3
	5	53	F	5	28	113	2.6	3	3.4	−3	3.9	3	3.1	7	3.0	11	3.4	3
	6	42	F	4	34	203	2.4	2	3.0	1	3.1	11	2.5	1	3.0	4	2.9	4
	7	40	F	4	25	118	3.7	−9	3.1	0	1.5	15	2.9	−1	2.5	6	2.6	4
	8	39	F	5	26	148	4.5	6	3.2	4	5.2	20	4.3	2	4.1	8	4.1	7
	9	46	F	1	17	47	..	..	3.2	−1	3.0	12	3.2	4	2.8	6	3.1	4
	10	56	M	5	..	..	2.4	12	1.1	4	1.3	5	3.0	3	1.6	7	1.6	5
IV	1	42	F	2	42	158	3.1	1	3.8	0	4.6	3	3.7	3	3.0	5	3.8	2
	2	15	M	5	33	309	2.8	4	3.3	4	5.2	0	3.4	11	2.5	4	3.6	4
	3	42	F	5	39	109	4.0	7	4.1	3	5.2	0	3.8	4	3.6	9	4.2	3
	4	19	F	4	..	..	3.6	6	3.9	0	4.2	30	4.4	5	5.1	−6	4.3	5
	5	22	M	1	46	176	3.2	10	3.3	4	5.2	3	3.6	3	3.7	0	3.8	1
	6	55	F	4	34	162	4.7	14	3.7	2	4.6	9	4.3	1	4.0	9	4.5	0
	7	50	F	1	13	58	3.4	6	2.5	8	2.3	8	2.6	4	2.5	9	2.4	8
	8	42	M	1	55	187	1.8	13	3.0	12	3.5	11	4.4	4	3.7	4	3.5	9
	9	20	F	6	..	..	4.0	17	4.6	4	6.8	17	4.3	13	5.8	−7	5.2	6
	10	53	F	3	27	95	5.9	8	4.3	1	3.5	20	3.6	8	4.2	9	4.0	8

grade, and he made one month of progress. At the beginning of the term he wrote as well as children normally do after one month in the first grade and he made as much improvement in the quality of his writing as children in the first grade make in four months. The other entries should be read similarly. The gains of the experimental groups shown in Tables XIII and XIV are uncorrected for practice effect. They correspond, therefore, to those presented in Table VIII. Table XV presents the total and interquartile ranges of scores for the intermediate and the advanced groups.

TABLE XV. TOTAL AND INTERQUARTILE RANGES OF SCORES FOR THE INTERMEDIATE AND ADVANCED GROUPS

(Initial scores in grade location, gains in school months)

	Intermediate Group		Advanced Group	
	Total Range	Interquartile Range	Total Range	Interquartile Range
Age	14 - 45	161:1–21:1	14 - 34	17:3–21:3
P. S. Grade	0 - 8	4.6 - 6.7	4 - 9	6.3– 7.6
Myers M.M. (raw score)	26 - 92	41 - 58	29 - 92	50 - 66
Pintner N.L. (raw score)	140 -518	280 -393	148 -640	370 -455
Oral reading (initial score)	1.4– 8.0	4.3 - 4.8	16 - 42*	28 - 36*
" " (gain)	—6 - 29	2 - 10	—5 - 10*	2 - 5*
Silent reading (initial score)	2.8– 8.5	4.6 - 6.0	5.4– 11.7	7.2– 9.5
" " (gain)	—14 - 22	5 - 14	—9 - 22	5 - 11
Writing (initial score)	1.8– 7.2	4.1 - 5.7	2.2– 10.6	5.5– 6.4
" (gain)	—12 - 34	4 - 13	—30 - 34	2 - 11
Arithmetic (initial score)	3.6– 8.7	4.6 - 6.0	4.8– 11.0	6.1– 7.5
" (gain)	—5 - 31	5 - 12	—3 - 38	13 - 26
Spelling (initial score)	2.6– 8.2	4.3 - 5.7	3.7– 10.7	5.9– 7.8
" (gain)	—21 - 30	3 - 12	—26 - 40	2 - 20
Composite RWAS (initial score)	3.1– 7.5	4.6 - 5.8	5.2– 10.4	6.6– 7.8
" " (gain)	—2 - 18	6 - 12	0 - 20	7 - 14
Language (initial score)	..	..	4.6– 11.6	6.9– 9.5
" (gain)	..	..	—48 - 52	1 - 21
Literature (initial score)	..	..	3.3– 10.3	5.4– 7.6
" (gain)	..	..	—38 - 42	0 - 14
History (initial score)	..	..	4.1– 10.9	5.7– 7.6
" (gain)	..	..	24 - 34	—1 - 18
Geography (initial score)	..	..	4.6– 11.3	6.1– 8.0
" (gain)	..	..	—21 - 38	—1 - 14
Physiology (initial score)	..	..	5.4– 11.0	7.1– 9.2
" (gain)	..	..	—48 - 43	—4 - 14

* These are raw scores because there are no grade equivalents for the large scores involved.

The entries in Tables XIII, XIV and XV indicate that individual gains vary notably. For example, the composite measure of gains presented in the right-hand column show that the students in Class I varied from no progress to nine months of progress. Such comparisons suggest that some students in each class made many times as much progress as others. These variations are doubtless due in part to the influence of such factors as intelligence, age, and initial achievement. Support for this view is found in Chapter VII in which coefficients of correlation are presented which reveal a positive relationship between intelligence test scores and gain in achievement and between age and gain. A close study of the facts recorded in Tables XIII, XIV and XV, however, shows how unreliable predictions are that are based entirely on age or intelligence test scores. Obviously, the chief value of these coefficients consist in revealing what is true in general, and not in telling what is true in individual cases.

The extent to which the scores recorded in Tables XIII, XIV and XV are in error is shown in Table II and in Table XII. The probable errors vary from one to three months, depending on the test used. Hence in extreme cases individual scores may be in error from four to twelve months. The very presence of minus gains is a practical reminder of inaccuracies in the measures of gain. It is logical to attribute minus gains to inaccuracies of measurement. But if inaccuracies made some gains too low, they probably made others as much too high. However, after discounting for inaccuracy of measurement, the fact remains that wide differences in gain were found among individuals and among different subjects taken by the same individual. These differences have practical significance with respect to the classification of students and the provision for individual needs and capacities.

Elementary School Certificates

One of the impressive results of the work of the Opportunity School related to the large number of elementary school certificates that were granted. Before the opening of the school, the State Superintendent of Public Instruction had agreed to grant certificates admitting to high school anyone who at the end of the term was able to attain a grade score of 8.0 or above on the New Stanford Achievement Test. The announcement of this plan created much interest and enthusiasm among the more advanced students.

On the occasion of the special program at the close of the term, fifty-two received elementary school certificates. Of this number, initial scores were available in 49 cases. The initial Stanford grade scores varied from 6.0 to 10.0+ for the students. The middle 50 per cent fell between 7.1 and 8.5. The median was 8.1. The progress made by individual students varied from 0 to 2 years, the middle 50 per cent making progress that varied from 4 to 12 months. The median gain was 8 months.

These data supply concrete evidence of one type of service rendered by the Opportunity School. The fact that those who received certificates made an average gain equal to that made normally in eight school months is very gratifying. It suggests splendid possibilities for service by opportunity schools of the type described in this report or by some other adult education agency.

Reactions of Students

One of the real tests of the value of any kind of training is the influence which it has on the lives of those trained; the changes which it produces in their habits, ideals, and ambitions; and the improvement noted and commented upon by those with whom the trainees have since come in contact. For these reasons statements from teachers, organizers, social workers, and employers are excerpted and given below.

One of the men in the beginners group wrote: "I want to come back next year and want to know if you can make arrangements for me to bring my wife with me." A brother closes his letter this way: "It would be hard for me to estimate the amount of benefit it was to me. Life seems changed altogether for me. I want to go to Clemson again, but I have brothers and sisters who are due a change, too."

A young woman, the mother of three children, wrote: "I often wish I could be in an Opportunity School for a year. It would do me so much good. Here at home I have so many things to do that I do not find time to study but very little. Please send me Miss Fair's address. I have thought of her so often when using the recipes she gave me. I thank you many times for insisting that I take cooking. I received more from that course than any other one."

The Opportunity School works all the time to interest students in going back to day school and completing the grades and even the high school courses. Due to curtailment of work in the textile centers this winter about eight of the students have gone back to school. One boy volunteered this

information. "I am in the ninth grade, keeping up well considering I did not take the eighth. I am going to school, playing football and working some in between school hours, so I am busy all the time."

The reading habit was one that was emphasized. One girl reported: "I have joined a public library since I came from Clemson. I have read two books and am going to get some more." Several other letters contained equally encouraging reports.

Many students could not pay their way and were not able to secure scholarships. The school was given a loan fund from which to lend worthy applicants half of their scholarship money. A former student came to Clemson on Sunday to make arrangements for a very worthy friend of his, as well as to bring his step-son back. There was only a half-scholarship available. He was pleased to receive this and to assume a note for the other ten dollars. He proved so worthy the authorities decided to ask him to remit only seven-fifty, due to the difficult financial period and his home obligations. His reply when it came ran thus: "You make a mistake. I owe ten dollars not seven-fifty. I am glad to pay it back with the enclosed money order for ten dollars, though this in no way pays for the good the school did me!"

Another said: "I cannot begin to thank you or tell you how many ways the Opportunity School has helped me, but I can say if nothing happens I intend to go back next summer. I have already begun to save my money for next year's scholarship. . . . My Clemson plant is still living and growing. I am taking good care of it."

A former president of the Erskine student body made this request recently. He was a student in 1926 and has steadily risen in the textile world until he was made a superintendent of a mill in October, 1931: "I have just been promoted to superintendent at the No. I plant, and I feel the need of English very much as I am dealing quite often with salesmen. I am thinking of getting a good teacher to teach me English and math, and I feel you could suggest some one that would suit me."

The following sentences are taken from the reply of a father who has had a son or a daughter in the Opportunity School every year since it began: "My wife and myself have enjoyed the children being in the Opportunity School each year and are always glad of the chance to send them. My oldest son went through the University of Georgia, then typhoid fever got into my family and broke me up, so I have had to limit the other children. This school has been a great help to all of my children. I can see it has caused them to take more interest in home affairs, church, Sunday school, and other things."

A teacher who is also the wife of the superintendent of a large mill wrote this in reply to a request: "The results from students sent to the Opportunity School have been very marked. First, in their attitude towards their parents, which we consider comes first; regularity in all things undertaken, depend-

ability, interest in church and community work is much greater, and quite a big difference in their loyalty to the mill. In fact it has made men and women who feel they are *somebody* and that it is their duty to do what they can. We were just talking about it this last week and one person said it was the most remarkable thing he knew of, the change wrought by the school."

The veteran night school teacher of the state and the county organizer reported as follows on four of the experimental group whom she had outfitted and sent to the school: "Francina is a regular pupil in our night school this session. Though she lived near the school she never attended night school before. We attribute this interest in night school to the taste of good things she got at Clemson.

"Ezra is one of the best examples of what the Opportunity School has done for a boy. He has attended three Opportunity Schools and every night school at Glenn Street for five years. He is a fine young man and remains cheerful though his work has been disrupted by mill conditions.

"Louise was much improved by her stay at Clemson. She is a regular attendant at the present night school, though she had never come before. She went very little to day school. Now she comes to all our Parent-Teacher meetings and all the other entertainments at the schoolhouse. This is something new for her. The Primary Department of the Baptist church which helped her get ready to go to Clemson is still helping her. She has a sick father and a little brother and is the only one who works and supports the three.

"Mr. Jackson was much benefitted by his stay and course at Clemson. He now has a small store. His wife helps him with this business. He works in the mill at night which, of course, prevents his continuing his education at the night school."

The statement below came from one of the superintendents of the chain of mills which has offered scholarships, sixteen the first two years before the organization of the boys' school, and thirty-two each year since. "The Riverside and Toxaway Mills sent to the Opportunity School last year four young men and four young women from each mill, a total of sixteen young people, all of whom were very much elated over their training and expressed themselves as being very much benefitted by the courses given. While it is impossible to estimate the direct, visible advantages obtained, yet it is worthwhile to mention the fact that from the eight young men sent, three have risen to the position of section men in their respective rooms, while one has been made night overseer. The young women are all well behaved, useful citizens of our community, and I know of at least two who are saving up enough money to pay their own expenses at the school this coming summer."

These excerpts should serve to suggest values which the present experiment was unable to study objectively. Such outcomes, however, are of greater value than the extreme emphasis in this chapter upon the results of standardized tests would indicate.

VII

Statistical Analysis

This chapter presents the results of statistical studies of the data secured in this investigation. The discussion of these studies is divided into two parts. The first part relates to problems involved in the measurement of the intelligence of practically illiterate adults. The second part is concerned with the relation of intelligence test scores, and amount learned to race, sex, and age in the experimental groups.

PART I

Problems Involved in the Measurements of the Intelligence of Practically Illiterate Adults

As stated in Chapter III, the Pintner Non-language and the Myers Mental Measure group tests were administered at the beginning of the school term. In order to compare the results of these tests with the mental ages derived through the use of individual tests, twenty-four white students from the Clemson experimental group selected to represent the total range of mental ages measured by the group tests, were given two individual tests, namely, the Stanford-Binet and the Pintner-Paterson Performance Scale. The individual tests were also given to twenty-six negroes so selected from the Seneca experimental group that they represented the whole range of group test mental ages. Of the group tests, the Myers was given first and the Pintner immediately afterward. Of the individual tests, the Binet was given first and the Pintner-Paterson was given about a week later. The average mental ages derived appear in lines 2 to 5 of Table XVI.

It was intended to use the two groups tested merely to determine the relation between the scores on the group tests used and the scores on the individual tests. The results, however, required further study and analysis. Why, for example, did each of the groups that were tested individually make widely different averages on the various

tests? And why, since the groups made practically the same average on the Binet test, did they differ in varying degrees on the other tests? It must be remembered in considering these questions that the groups now under discussion were not random halves of the experimental groups. They were selected to insure representation of the various levels of ability. An analysis of the results for the entire experimental group will be described in Part II of this chapter.

TABLE XVI. MEAN SCORES FOR TWENTY-FOUR WHITE AND TWENTY-SIX NEGRO STUDENTS

	Whites	Negroes
Age[1]	21	38
Binet	9:2 + 1 mo.[2]	9:1 + ½ mo.
Pintner-Paterson	8:8 + 2 mo.	8:1 + ½ mo.
Myers	9:4 + 2 mo.	8:0 + 1 mo.
Pintner Non-language	8:8 + 3 mo.	7:2 + 1 mo.
Binet Vocabulary	8:4	9:2
Word Recognition	7:4	7:11
Information	46	51
Deliberation	2.1	7.5
Public School Grade	1.5	1.0
Initial RWAS	2.4	2.5
Gain in RWAS	4.7	4.0
P.P. 1 Mare and Foal Time	9:1	10:2
" " " Errors	9:11	12:0
" 2 Seguin Board	8:7	8:0
" 3 Five Figure—Time	8:6	7:5
" " Errors	7:7	7:2
" 4 Two Figure—Time	9:4	8:7
" " Moves	10:7	9:11
" 4 Casuist—Time	10:1	9:6
" —Errors	9:11	9:11
" 9 or 10 Mannikin or Profile	9:5	8:8
" 11 Ship	7:5	6:1
" 12 Picture Completion	8:0	6:6
" 13 Cube	8:10	7:1
Myers 1 Direction Test	9.7	9.8
" 2 Picture Completion	9.4	6.5
" 3 Common Elements	5.7	4.0
" 4 " "	6.8	4.1
P n-1 1 Imitation	3.4	2.8
" 2 Easy Learning	17.6	9.2
" 3 Hard "	14.3	5.4
" 4 Drawing Completion	10.7	6.8
" 5 Reversed Drawings	2.6	1.4
" 6 Picture Reconstruction	4.9	3.0

[1] Range and Q for whites, 16 to 37, and 2.5; for negroes, 15 to 60, and 12.5.

[2] P.E.=P.E. dist. $\sqrt{1-r}$.
r estimated to be .84 for all four tests.

The order in which the group tests were administered was dismissed as an explanation of the differences in mental test scores because the tests were given in the reverse order to the Clemson intermediate and advanced groups with the same general results. Other administrative explanations were considered unlikely and were tabled pending a search for other factors. A comparison of the Myers scores and of the Pintner Non-language scores suggested a lead.[1] This comparison showed that the negroes made a slightly higher score on the Myers test 1, which is a directions test, and made lower scores on all other parts of the test. Additional study revealed at least four influential factors, namely, the verbal element in the test, the nature and amount of the adult's experience, his capacity for speed, and his habits with respect to deliberation. The correlations and averages reported in Tables XVII to XXI were computed in order to evaluate the influence of these factors.

The Verbal Versus the Non-Verbal Intelligence Test

The verbal test and sub-test scores available were as follows: (1) Myers Mental Measure, test number 1,[2] a directions test like army alpha test 1, (2) the Gates Primary Word Recognition test, (3) the Binet Vocabulary test, and (4) an information test prepared for this investigation. The first two were used in the form in which they are standardized. The Binet Vocabulary test scores were converted into mental ages by interpolating between the norms given by Terman.[3] Otherwise it was used as it appears in the Binet test.

The information test was prepared by Wil Lou Gray and Erin Kohn. It included seventy-five questions relating to history, current events, geography, natural science, civics, citizenship, health, and the Bible. These questions were then so worded that they might be answered by "yes," "no" or "I don't know." The adults were taught to underline "yes," "no" or "I don't know" on blanks printed for the

[1] This lead would have been suggested by the reading of H. E. Jones, *The Pattern of Abilities Among Adult and Juvenile Defectives*. Berkeley: University of California Press, 1931, had that report been read earlier.

[2] This is called a verbal test because it is a test of the comprehension of and ability to follow directions. To call it non-verbal because the answers are not in words would be equivalent to calling the Burgess Silent Reading Scale a non-verbal test.

[3] Terman, L. M., "The Measurement of Intelligence," Boston, Houghton Mifflin Co., 1916.

TABLE XVII. CORRELATIONS[1] BETWEEN TEST SCORES FOR TWENTY-FOUR WHITE AND TWENTY-SIX NEGRO STUDENTS

Correlations for Whites Above
Correlations for Negroes Below

	Binet	Pintner-Paterson	Myers	Pintner Non-language	Binet Vocabulary	Word Recognition	Initial RWAS	Information	Seguin Speed	Deliberation	Gain RWAS	Age
Binet	..	.63	.86	.72	.72	.57	.44	.79	.47	−.04	.53	.11
	..	.59	.50	.53	.69	.46	.49	.59	.28	.12	.16	.04
Pintner-Paterson	.63	..	.68	.70	.26	.38	.53	.67	.53	−.12	.34	.09
	.59	..	.81	.69	.24	.62	.63	.54	.55	.24	.19	.00
Myers	.86	.68	..	.74	.51	.29	.24	.84	.59	−.09	.44	.07
	.50	.81	..	.69	−.04	.51	.54	.32	.65	.11	.40	−.29
Pintner Non-language	.72	.70	.74	..	.68	.44	.49	.82	.63	−.19	.26	.09
	.53	.69	.69	..	.00	.72	.65	.54	.44	−.05	.28	−.38
Binet Vocabulary	.72	.26	.51	.68	..	.67	.40	.70	.46	−.28	.38	.34
	.69	.24	−.04	.00	..	.31	.47	.35	−.02	.34	−.26	.59
Word Recognition	.57	.38	.29	.44	.67	..	.84	.65	.04	.21	.47	−.02
	.46	.62	.51	.72	.31	..	.88	.74	.34	−.04	.05	−.23
Initial RWAS	.44	.53	.24	.49	.40	.84	..	.38	.09	.21	.49	.07
	.49	.63	.54	.63	.47	.88	..	.78	.21	.11	.11	−.12
Information	.79	.67	.84	.82	.70	.65	.38	..	.47	−.04	.40	.19
	.59	.54	.32	.54	.35	.74	.78	..	.21	.21	.29	−.28
Seguin Speed	.47	.53	.59	.63	.46	.04	.09	.47	..	−.72	.37	−.02
	.28	.55	.65	.44	−.02	.34	.21	.21	..	.00	.32	−.29
Deliberation	−.04	−.12	−.09	−.19	−.28	.21	.21	−.04	−.72	..	−.11	.07
	.12	.24	.11	−.05	.34	−.04	.11	.21	.00	..	−.19	.38
Gain RWAS	.53	.34	.44	.26	.38	.47	.49	.40	.37	−.11	..	−.41
	.16	.19	.40	.28	−.26	.05	.11	.29	.32	−.19	..	−.61
Age	.11	.09	.07	.09	.34	−.02	.07	.19	−.02	.07	−.41	..
	.04	.00	−.29	−.38	.59	−.23	−.12	−.28	−.29	.38	−.61	..

[1] $r = 2 \cos \frac{\pi}{3}(1-R) - 1$,

where $R = 1 - \frac{6 \Sigma G}{N^2 - 1}$

(The probable errors vary from .03 for a correlation of .88 to .14 for a correlation of zero. Aside from the chance error involved, close comparisons should not be made because of differences in age range and sex.)

purpose, and the test was administered as a group test. It proved to be a very satisfactory measure of verbal intelligence[1] correlating as closely with Binet as did the Binet vocabulary, and more closely than

[1] As a test of information it should have been validated against scores obtained by individual testing. Time did not permit this.

did the Gates Word Recognition Test. The Myers Mental Measure correlated about as highly with Binet, but not so highly with Binet

TABLE XVIII. AVERAGE SCORES FOR GROUPS OF THE SAME AGE BUT WITH DIFFERENT AMOUNTS OF SCHOOLING

	Whites		Negroes	
	4M 5F Not Beyond First Grade	6M 6F Beyond First Grade	7M 7F Not Beyond First Grade	2M 6F Beyond First Grade
Average School Grade	.4	2.8	.6	3.5
Age	20.0	19.3	40.7	40.9
Initial RWAS	2.0	2.8	2.2	3.0
Gains RWAS	.38	.58	.41	.38
Initial Information	33.4	53.0	43.	60.
Binet	8:6	9:7	8:11	9:2
Pintner-Paterson	8:8	8:9	7:9	8:0
Myers	8:6	9:8	7.3	6:8
Pintner Non-language	7:7	9:3	6:8	7:2
Binet Vocabulary	7:7	8:10	9:2	9:4
Word Recognition	6:8	7:11	7:6	8:6
Deliberation	14.0	−2.0	15.0	6.0
P.P. 1 T	7:4	9:7	9:0	10:5
" 1 E	9:5	10:0	12:6	11:5
" 2	8:4	8:10	7:7	8.3
" 3 T	8:0	9:0	7:8	8:2
" 3 E	7:3	7:6	7:2	7:8
" 4 T	10:4	8:11	8:4	8:2
" 4 E	12:11	10:0	9:10	9:8
" 5 T	9:7	10:3	7:6	10:11
" 5 E	10:9	9:3	9:0	10:2
" 9 or 10	8:5	10:8	8:0	9:9
" 11	7:3	7:7	5:5	6:2
" 12	7:7	8:8	6:4	5:8
" 15	9:11	7:10	6:5	7:5

vocabulary.[1] The first test in the Myers Mental Measure, requiring about five minutes, gave a correlation (method of unlike signed pairs) of .89 with Binet for the whites and of .56 for the negroes. These correlations, together with the fact that the Binet directions test shows

[1] This fact suggests that the Myers Mental Measure may correlate more highly with Binet than with McCall multi-mental. Vernon A. Jones, "A Study of the Non-verbal Nature and Validity of Myers Mental Measure," Journal Educational Research, 16:203–209.

an approximate equality between the 24 whites and 26 negroes, suggest that a directions test is a good group test to take the place of the Binet test when testing groups of practically illiterate adults. How advantageous it is to use a test like the Binet is another question. If the purpose of intelligence testing is to predict the amount of learning of which an adult of limited education is capable, then it appears from the entries in Table XVII that the Binet mental ages are no more valuable than the Myers mental ages.

All four of the verbal tests mentioned above indicate that the 26 negro students were more intelligent than the 24 white students. All of the non-verbal tests, except one which will be commented on later, indicate that the white students were the more intelligent. The Myers and Pintner Non-language tests indicate that the difference is sixteen months in one direction, and the Binet Vocabulary Test indicates that the difference is ten months in the other. Since a month is .6 of an I. Q. point on a basal age of fourteen, the negro students had a ten point lower I. Q. than the whites or a six point higher I. Q., depending on the test used. If we turn from the general comparisons of Table XVI to the more specific comparisons which can be made from the data in Table XIX, we find that the negro men surpass the white men on both the Gates Word Recognition Test and the Binet Vocabulary Test, although they make a lower score on the Pintner-Paterson, the Myers, and the Pintner Non-language tests. The average mental age of the negro men is either four months higher than that of the white men or thirty-two months lower, depending upon the kind of test used.[1]

On all five of the tests mentioned in the preceding paragraph, Table XIX shows that the thirteen white men are more intelligent than the eleven white women. But on the Gates word recognition test they surpass the women by only two months, or one I. Q. point, whereas on the Pintner Non-language test they excelled by thirty-three months or twenty I. Q. points. The sexes in the negro group were more nearly equal, so that the men's average score was higher than the women's on the Myers test by nine months or five I. Q.

[1] Peterson and Lanier used the Myers test in comparing white and negro high school and college students. It is interesting to note that whereas the practically illiterate negroes made their best showing on the verbal part (Test 1), the negro high school and college students made their poorest showing on it.

J. Peterson and L. H. Lanier. *Studies in the Comparative Abilities of whites and negroes.* Mental Measurement Monographs, Vol. II. Serial No. 5, February, 1929. Baltimore, The Williams and Wilkins Co.

points, while their Binet vocabulary score was ten months or six I. Q. points lower.

TABLE XIX. RACE AND SEX DIFFERENCES

	Thirteen Negro Women	Thirteen Negro Men	Thirteen White Men	Eleven White Women
Age	48.6	27.6	22.3	19.0
Median Grade in Public School	1	1	1	2
Initial RWAS	2.7	2.3	2.4	2.4
Gain in RWAS	.28	.54	.57	.36
Initial Information	48.4	53.0	57.4	32.6
Binet	9:2	9:0	9:11	8:3
Pintner-Paterson	8:2	8:0	9:3	8:0
Myers Mental Measure	7:7	8:4	10:6	8:0
Pintner Non-language	6:11	7:5	10:1	7:4
Binet Vocabulary	9:7	8:9	8:8	7:11
Word Recognition	8:2	7:9	7:5	7:3
Deliberation	14.1	.9	−2.8	6.7
P.P. 1 T	10:1	10:5	10:6	7:5
" 1 E	11:7	12:5	11:0	8:7
" 2	7:8	8:4	9:3	7:11
" 3 T	8:3	7:7	10:1	7:7
" 3 E	7:7	6:10	8:8	6:4
" 4 T	7:9	9:5	9:6	8:11
" 4 E	10:11	8:10	9:11	11:4
" 5 T	8:10	10:4	11:2	8:11
" 5 E	10:6	9:4	9:11	9:11
" 9 or 10	9:10	7:7	10:2	8:5
" 11	5:11	6:4	7:8	7:1
" 12	6:0	7:0	8:7	7:3
" 15	7:3	7:0	8:11	8:7

What difference does it make whether you use a verbal or a non-verbal test when comparing groups of different ages? The correlations (see Table XVII) between Binet vocabulary and age are .34 for whites and .59 for negroes, while between Myers and age the correlations are .07 and −.29, respectively, and between Pintner Non-language and age they are .09 and −.38, respectively. On the Binet vocabulary test the older negro men excelled the younger by twenty-nine months, or seventeen I. Q. points; on the Pintner Non-language the younger men excelled the older by thirteen months, or eight I. Q. points. The older men were raised from a position eight points below the younger men to a position seventeen points above them by the use of a verbal

test in place of a non-verbal one. On the Pintner Non-language test, all whites in the experimental group under twenty averaged 9.5 and those twenty or over averaged 9.1, but on the Myers direction test the older group averaged 11.4 and the younger group 10.7. Likewise, all negroes under forty, and those forty or over averaged 7.2 and 6.9 on the Pintner test, and on the Myers direction test, 10.1 and 10.3. In each racial group, the older were the less intelligent according to the Pintner Non-language test and the more intelligent according to the Myers direction test. In the case of the whites, a similar reversal occurred in the ranking of the older men on the Pintner test and the whole Myers test. In terms of the Pintner scores the older were less intelligent by four months, whereas in terms of scores on the Myers test they were more intelligent by two months. That the Myers test raised the older white students to a position of superiority but did not do so for the older negro students is another fact which calls for explanation. It failed to do the latter in spite of the fact that the sex factor favored the shift in the case of the negro group and worked in the opposite direction in the case of the white group—the women predominating in the group of older negroes, and the men predominating in the group of older whites. A possible explanation will be presented in a later section of this chapter.

The foregoing discussion shows that the correlation between age and intelligence test scores may be positive or negative, depending upon the verbalness or non-verbalness of the test used. The negative correlation between age and intelligence as measured by a non-verbal test may be due to the presence in the testing of the speed factor. Less speed and not the non-verbalness of the test may cause the lowered score. At any rate speed does not account for the positive correlation between age and score on a verbal intelligence test. The correlation between age and Binet vocabulary remains high and positive for both groups when speed is rendered constant.

It may also be said that it makes quite a difference whether a verbal or non-verbal test is used when comparing racial or sex groups. In the two comparisons cited, the I. Q.'s of the negroes (relative to those of the whites) were increased sixteen and twenty-two points, respectively, by the use of a vocabulary test rather than a largely non-language test. Similarly the use of a vocabulary test increased the I. Q.'s of the women (relative to those of the men) by eleven and eighteen points, respectively. In both racial comparisons and in one

of the comparisons of the sexes, there was evidence in support of conflicting answers to the question, "which group was the more intelligent?"

Speed

The reciprocal of the time for the best of three trials with the Seguin form board was used as a measure of speed or rate. The measure was found to be positively correlated with all four kinds of intelligence test scores in both groups, and to be negatively correlated with age.

It is interesting to note that the correlation of −.29 for the Seneca group, when corrected for the difference in age ranges[1] involved, is practically equal to the correlation reported by Miles,[2] for right-hand coordination. However, the −.29 represents a greater decrease of speed with age than Miles found, because his data, grouped in averages, localize most of the decrease in the period beyond 60. It is quite possible that the −.29 is due as much to other factors as to physiological changes related to age. All that can be said is that the adults worked hard and eagerly, and if the lower speed of the older ones was not wholly due to a physiological incapacity, the effect was the same as if it had been.

The correlation between age and speed remains negative for both groups when Binet mental age is held constant. It even remains negative when the Myers or Pintner score is held constant, which is a severe test of the negativeness of the relation between age and speed.

Deliberation

The word deliberation is used here to designate a score made by subtracting the "time" age from the "error" age for the Mare and Foal, 5-figure, 2-figure, and Casuist boards.[3] The word is used because the person who makes a better showing by making every move count than by decreasing the time taken for the completion of the task,

[1] T. L. Kelley, *Statistical Methods*, New York, Macmillan, 1924, Section 62, p. 221.

[2] W. R. Miles: "Correlation of Reaction and Coordination Speed with Age in Adults," The American Journal of Psychology, 43:377–391, July, 1931.

[3] It is not necessary to compute this measure in this way, nor is it necessary to use a standardized test. A person's rank in his group by a time score might be subtracted from his rank by an error score on the same test, the higher rank numbers having been assigned to the fewer errors and shorter times. As computed for one group, the deliberation score had a reliability coefficient of .65.

appears to deliberate or, as it were, to make his mistakes mentally. This deliberation does not necessarily characterize the slow, as the saying, "slow and deliberate," would indicate. Among the 24 white adults, slowness and deliberation were positively associated, as indicated in Table XX, but among the negroes the correlation between speed and deliberation was zero. It became positive, however, when age was held constant.

TABLE XX. AVERAGES FOR AGE GROUPS WHEN RACE, SEX, SCHOOLING, AND OCCUPATION ARE HELD CONSTANT

	White Men		Negro Men		Negro Women[1]	
Number	6	5	5	5	6	7
Age	18	30	21	39	42	54
Average Gr. in Pub. Sc.	1.2	1.0	1.2	.8	1.8	1.9
Initial RWAS (Grade Units)	2.2	2.5	1.8	2.7	3.3	2.2
Gain RWAS (in months)	5.6	5.0	5.6	4.0	3.8	1.9
Initial Information	44.7	73.0	35.6	67.4	75.0	25.3
Binet	9:1	10:11	8:9	9:7	9:11	8:7
Pintner-Paterson	8:11	9:6	7:10	8:0	8:8	7:9
Myers Mental Measure	9:0	12:0	9:4	7:7	8:10	7:3
Pintner Non-language	9:11	9:8	7:7	6:6	7:9	6:3
Binet Vocabulary	8:0	9:3	7:8	10:1	9:8	9:5
Word Recognition	7:1	7:9	7:1	7:7	8:11	7:4
Deliberation	9.5	−9.0	0.0	14.4	10.0	17.6
P.P. 1 T	9:6	11:10	10:0	9:7	10:6	9:8
" 1 E	12:2	10:7	12:10	14:10	12:0	11:2
" 2	8:2	9:10	8:10	8:5	8:0	7:5
" 3 T	9:10	10:0	8:0	7:7	9:0	7:7
" 3 E	8:8	9:0	7:2	7:0	8:2	7:2
" 4 T	10:0	8:10	9:7	8:10	9:0	8:0
" 4 E	11:0	9:5	9:2	8:5	10:2	11:5
" 5 T	9:8	11:10	10:2	10:2	10:2	9:5
" 5 E	9:8	9:7	10:2	10:2	10:10	10:2
" 9 or 10	8:8	10:10	7:0	7:0	11:0	7:11
" 11	7:0	8:0	5:0	5:7	6:6	5:0
" 12	9:2	7:2	7:0	5:10	7:2	5:0
" 15	8:4	10:2	8:0	5:10	6:8	7:8

[1] A comparison of white women was not made because the narrow age range of that group did not justify it.

Deliberation in both groups is positively associated with age. A positive correlation between age and deliberation remains when speed is held constant. The correlation is higher for negroes than for whites. That a chance to "make haste slowly" favored both adult groups more than it does average children, and favored the negro adult more than it did the white, may be illustrated by the scores on the

5-figure, 2-figure, and Casuist form boards. The "time" ages for the whites rose in the series of boards from 8:6 through 9:4 to 10:1; and the corresponding ages for the negroes were 7:5, 8:7, and 9:6. The "error" ages did not rise so regularly, being 7:7, 10:7, and 9:11 for the whites, and 7:2, 9:11, and 9:11 for the negroes. The combined time and error scores on the boards were as follows: for 24 whites, they were 8:1, 10:0, and 10:0; for 26 negroes, they were 7:7, 9:3, and 9:9; for both groups combined, they were 7:10, 9:8, and 9:11. These data show that it made a difference of sixteen I. Q. points whether the adults were measured on the first or the third board. Whereas it made only fourteen points of difference for the whites, it made sixteen points of difference for the negroes. This difference was sufficient to classify the negroes as less intelligent than the whites in the one case or as practically equal to them in the other.

The average deliberation scores show that the negroes were more deliberate than the whites and that the women were more deliberate than the men; but no comparisons have been made between races or sexes with intelligence and age held constant. Possibly much of the difference in deliberation score would disappear if such comparisons were made. This raises the question whether the difference in deliberation between the adult group and the children may not have been due to comparisons with average instead of dull children.

In order to answer this question, test results for children were studied. R. Pintner kindly supplied sixty-three Pintner-Paterson test records. Deliberation scores were computed for them, and the group was divided into "below average," "average," and "above average" on the basis of Pintner-Paterson I. Q. records. The results, together with deliberation averages computed from data published by Buford Johnson and Louise Schriefer,[1] are presented in Table XXI. The fact that chronological age is not constant in this table is of no consequence for the present purpose, for the deliberation score used compares every child with the average child of his own age. The factor of chronological age, so far as it affects the average child, is held constant in the standardization of the scale.

According to the children's scores, deliberation is associated with brightness, and the lack of it with dullness. The rapid children of a

[1] Buford Johnson and Louise Schriefer, "A Comparison of Mental Age Scores Obtained by Performance Tests and the Stanford Revision of the Binet-Simon Scale." Journal of Educational Psychology, 13:408–417.

given age are deliberate; the slow are overt in their reactions. In other words, in performing a given task, the rapid children make an even better showing in the efficiency of the performance than they do in the speed with which they accomplish it; while the generally slow children make a better showing in the speed with which they accomplish the task than they do in the efficiency with which they work.

TABLE XXI. THE RELATION BETWEEN I. Q. AND "DELIBERATION"

I. Q.[1] of the Group	Ages	No. of Cases	Deliberation, or "Error Age," minus "Time Age," in Months
161	7	7	2.5
145	6	21	3.2
135	5	21	2.3
131	8	5	.7
127	9	9	.3
115	5–12	37	−.9
100	6–15	16	−7.3
75	8–16	10	−8.4

[1] This I. Q. is, in the case of Johnson and Schriefer data, average Pintner-Paterson Mental Age divided by average C.A.; for Pintner data, it is the approximate median Pintner-Paterson I. Q. of the group.

Since dull children are less deliberate than average children, the fact that the fifty adults were more deliberate than average children shows that they were so in spite of their low intelligence test scores, not because of them. The same thing cannot be said of the progressively higher score which the adults made on the form boards. The data supplied by Pintner show some tendency for dull children to do the same thing, which is not incompatible with correct standardization, because the data published by Johnson and Schriefer show the opposite trend for bright children.

The Pintner data when broken up into age groups for the years 9 to 14, with a constant low I. Q., show no evidence of an increase in deliberation. But whatever the facts may be from year to year, the adults made their higher deliberation scores, so far as this analysis has been able to determine, because of their age, or the habits which come with age. It is probably due to a very large extent to a decrease of speed with age, or as the case may be, to a disinclination to hurry which increases with age. In support of the opinion that it is a matter of disinclination or lack of drive, attention is called to the fact that for

all sub-groups, no matter how deliberate they were in general, the "time" age on the 5-figure board was higher than the "error" age. On the 2-figure board, which followed, the "error" age was the higher for the groups which we have called the more deliberate. On the Casuist board, deliberation was still more in evidence. It appears that the relatively deliberate adults were stimulated by the Seguin board (which preceded the 5-figure board) to work for a while at a rate which they were disinclined or unable to continue. At any rate, the decrease of capacity for speed does not explain it all. The correlation between deliberation and age for both groups remains positive when speed is held constant. Probably age also decreases the overtness of trial and error performance. There is an apparent weakness in the above generalization as to the relation between age and deliberation. Of the male white students, the younger group was the more deliberate. This exception will be discussed in the following section.

Experience

It was stated earlier in this chapter that on all of the non-verbal tests, except one, the whites surpassed the negroes. The non-verbal test on which the negroes surpassed the whites was the Mare and Foal test. It was this exception to the rule which suggested an inquiry into the occupation of the members of the groups. The facts are that two-thirds of the negroes were farm workers and three-fourths of the whites were textile mill workers[1] and mechanics. It is very interesting to note (see Table XVI) that the negroes surpassed the whites on the Mare and Foal test by nineteen months of mental age or 11 I. Q. points, or by just about as much as the whites excelled in the Ship, Picture Completion, and Cube tests.

It is interesting to note in this connection a difference between the racial groups in the percentage of correct responses to a part of the Binet test. In year XIV, test 4, part a, the subject is given a setting, and then is asked what the frightened man had seen hanging from the limb of a tree. In the course of the Binet testing, 13 whites and 16 negroes were asked this question. Only six of the whites answered "a man" but all of the negroes did. This difference cannot be expressed in terms of mental age or I. Q., but it serves to show the effect of background differences.

[1] This difference in occupational background probably would exist in any pair of groups selected from the same sections of South Carolina.

What is the bearing of experience upon speed and deliberation? The negroes who were not farm workers were not mill workers, but the whites who were not textile workers or mechanics were farmers or worked at home. Only six of the twenty-four were in this latter group, but their average deliberation scores are reported because they are at least suggestive. The mill workers were non-deliberate to the extent of 19 months. The suggestion here is that under mill work conditions, ability is directed toward production rather than toward deliberation, or that foremen, superintendents, or owners tended to recommend for admission to the Opportunity School those who have ability and are more productive rather than deliberate. At any rate, such a description fits the white mill workers as compared with the farm or home workers, and the men as compared with the women. The negative correlation between deliberation and intelligence in the white group follows, since the men were older and abler. However, when speed is held constant, all correlations between intelligence and deliberation become positive.

The presence in this group of mill workers with their relatively high speed scores accounts for the fact (mentioned earlier in the chapter) that the use of the Myers instead of the Pintner test raised the whites who were more than twenty years of age to a position of superiority over the whites in their teens, but did not do so in the case of the older negroes. Since the older whites were almost as rapid as the younger ones, the addition of a verbal element in the test more than compensated for their slightly lower speed.

The relation of public school experience to intelligence test scores is shown in Table XVIII. The usual positive correlation between intelligence and amount of schooling is shown. It is much more pronounced for the whites than for the negroes. The latter fact might be discounted by claiming that the negroes' own statements of their school experience may not be taken at their face value were it not for the fact that their statements of grade agreed as closely with their grade location test scores as did those of the whites.

If the intelligence test scores of adult groups differ because of the differences in schooling which they have had, why did not three more years of schooling make as much difference for negroes as it did for whites? In line with what has been shown earlier in this section, it might be claimed that two or three years of schooling make a big difference in the kind of work obtained and that differences in work

account for the differences exhibited by the racial groups. On the other hand, one might claim that adult intelligence test scores correlate positively with schooling not so much because the school produced the differences as because it acted as a selective factor. The higher relation shown for whites would be expected if whites rather than negroes were more likely to be unschooled because of low ability and if negroes rather than whites were more likely to be unschooled because of lack of opportunity. However the relation between schooling and intelligence is explained, the use of the two group tests instead of the Binet penalized the unschooled whites by only four months of mental age and the negroes not at all. Using the Pintner-Paterson scale as a criterion, the use of the group tests penalized the unschooled by sixteen months of mental age or 10 I. Q. points and the negroes not at all.

By way of summary, it may be said that an attempt has been made in this part of the chapter to describe the influence upon intelligence test scores of (a) the extent to which the test measures verbal ability, (b) the extent to which it allows the subject to work at his own rate, and (c) the extent to which the subject's background has fitted him for the test. It has been impossible to isolate the factors studied in order to show their influence alone. Along with differences in the verbalness of the test used are differences in the extent to which each requires speed or provides for deliberation. However, the data available suggest that verbal ability increases with age and that it is greater for negroes than for whites and greater for women than for men.

In general, the older members of the group are slower and more deliberate than the younger ones, but sex, intelligence, and occupational differences complicate the relationship. The theory advanced is (1) that the deliberation measured is due very largely to an increased disinclination to work at top speed, (2) that this increase may be counteracted by schooling and occupations which put a premium on speed, and (3) that the traditional sphere of women also favors the increase of deliberation with age.

Whatever interpretation is made, the fact remains, namely, that in comparing race with race, sex with sex, or age group with age group (1) superiority is attached to one group or the other according to the test used; and (2) that in magnitude, the superiority of one group over the other may occasionally be as great as twenty I. Q. points. For example, if group A is 20 points lower than group B on one test it is possible

that on another test group A's score would equal B's; or if the average for group A is 10 points lower than that for B group, on another test, the average for group A might be 10 points higher.

PART II

The Relation of Intelligence and Learning to Race, Sex, and Age in the Experimental Groups

Comparison of Racial Groups

The negroes were eighteen years older than the whites, the average ages being forty and twenty-two, respectively. They were mostly farmers, whereas the whites were mostly mill workers. The negroes had had slightly less schooling by their own statements, but the same amount as measured by tests of achievement. The grade locations were: for whites, 2.4 by statement and 2.5 by test; for negroes, 2.2 by statement, 2.5 by test. The negroes made lower intelligence test scores than the whites. The averages are shown in Table XXII.

TABLE XXII. AVERAGE MENTAL AGES OF THE WHITE AND THE NEGRO EXPERIMENTAL GROUPS

Mental Tests	Whites	Negroes
Pintner Non-language (mental age)	9:0	7:3
Myers (mental age)	9:10	8:2
Myers test No. 1 (scores)	10.2±.5	9.8±.6[1]

[1] These are raw scores, not ages.

$$\text{P.E.} = \frac{\text{P.E. dist.}}{\sqrt{N}}$$

Probably the negroes excelled the whites in vocabulary, but Binet vocabulary was negatively correlated with gain. The intelligence test score most highly correlated with gain in the negro group was the Myers mental age. As shown in Table XXII, their score on this test was relatively low. It may be said, therefore, that the Seneca group made a very creditable showing in comparison with the Clemson experimental group, in so nearly equalling its gain. The gains were, as stated in Table XI, Chapter VI, for the Clemson experimental group, 3.7 months, and for the Seneca group, 3.4. The difference is statistically not significant. The negro gain is a credit to their zeal, to their

teachers, to the unprejudiced effort made by Mrs. D. Watkins and Miss Wil Lou Gray to provide every possible advantage, or more likely to some combination of these factors.

Sex Comparisons

The data for the experimental groups have been arranged with respect to the sexes in Table XXIII. The intermediate and advanced groups have been studied also, but the data are not tabulated here.

In all four groups the men made the higher intelligence test scores. This difference between the sexes in the Clemson experimental group was so great that it probably would have been exhibited no matter what test had been used. In the Seneca experimental group, the women scored almost as high on the Myers direction test and would probably have made the higher score on the Binet vocabulary test. In the intermediate and advanced groups, the difference on the combined Pintner and Myers score was only 5 months of M. A., and on the first part of the Myers test (the directions test) the women made a slightly higher score.

TABLE XXIII. COMPARISON OF SEXES IN MENTAL AGE AND PROGRESS

	White		Negro	
	Men	Women	Men	Women
Number[1]	31	16	19	28
Age	23	19	33	44
Schooling in Years	2.4	2.3	1.9	2.5
Pintner Non-language	10:0	7:8	7:5	7:2
Myers	10:3	9:0	8:8	7:10
Myers Number 1	11.7	8.5	9.9	9.7
Initial reading score	2.1	2.2	2.0	2.6
Initial writing score	2.5	3.1	2.4	2.7
Initial arithmetic score	3.6	3.0	2.9	2.9
Initial spelling score	2.2	2.4	2.0	2.6
Initial RWAS composite	2.5	2.6	2.3	2.7
Gain in reading[2]	3.5±.3	4.1±.4	3.2±.4	2.0±.3
Gain in writing	10.0±.6	7.3±.7	7.5±.5	8.6±.4
Gain in arithmetic	6.6±.4	3.9±.5	3.7±.2	3.1±.1
Gain in spelling	2.0±.4	2.6±.5	3.8±.5	5.1±.4
Gain in RWAS	5.1±.3	4.4±.4	3.9±.4	3.9±.3

[1] The ratio of sexes may not be attributed to the frequency of illiteracy in the population at large if Winston's findings hold in the section from which the experimental groups came. Sanford Winston: "Illiteracy in the United States," Chapel Hill, University of North Carolina Press, 1930.

[2] Gains are uncorrected for practice effect. The errors are probable errors of sampling.

In the Seneca group, the women were older, but in all white groups the women were younger. In the intermediate and advanced groups the difference in age was a matter of months.

There were no consistent sex differences in reading. In arithmetic, the men in all three white groups came with a higher proficiency and made the greater progress. The men were poorer in writing at the beginning, but made the greater improvement. The women were the better spellers and made the greater progress in spelling.

In the low classes of the experimental groups, both men and women were best in arithmetic and writing; and in the upper classes they were best in reading. It was true of both sexes in the experimental group at Seneca that the greatest gain was made in writing and the least gain in reading. In the Clemson experimental group, both sexes made least progress in spelling. In the advanced group the greatest progress was made in arithmetic by both sexes.

Doubtless some of these results are typical and some are peculiar to the groups measured and to the instruction which they received during the month. In order to secure evidence on this point, Mrs. Elizabeth Morriss, Director, and Mrs. J. M. Day and Mrs. Edgerton, Supervisors of Adult Education in Buncombe County, North Carolina, were asked to indicate in which subject adults usually make their best showing, in which subject their next best showing, and so on, for reading, writing, arithmetic, and spelling. Their combined judgment for white men agreed with the test scores in placing arithmetic and writing above spelling and reading. Their judgment also agreed with the test scores to the effect that women are best in writing. According to their judgment, women are better in reading than in arithmetic. The initial test scores did not show this, but it was true of the progress which they made. It is quite likely that mill experience and occupational incentive make a difference. If vocation accounts for the relatively high showing in arithmetic which the men make, the results for women should be more comparable with those for men when more of them engage in the same type of work.

Adult education workers should remember in checking these results against their own observations that the women were less intelligent than the men in both the white and negro experimental groups. They should also remember that it is very difficult to judge progress, much harder than to judge proficiency at a given time, and that a distinction should be made between judging proficiency and judging progress.

The Relation Between Age and Learning

The correlations between age and learning are presented in Tables XXIV, XXV, and XXVI. Table XXIV includes the uncorrected zero order coefficients. These are corrected for attenuation in Table XXV. The reliabilities used are those which were tabulated in Chapter III for the initial scores and in Chapter VI for gains. Table XXVI presents the partial coefficients between age and gain with initial scores held constant. The initial scores were held constant

TABLE XXIV. CORRELATIONS[1] BETWEEN AGE, INTELLIGENCE, INITIAL SCORE, AND GAIN

(Uncorrected for Attenuation)

	Clemson		Seneca		
	Initial	Gain	Initial	Gain	
Reading	−.146	−.117	−.071	−.275	Age
	.284	.205	.605	.343	Intel.
	..	.371	..	−.134	Initial
Writing	−.363	−.073	−.188	−.208	Age
	.177	.445	.460	.000	Intel.
	..	.099	..	.022	Initial
Arithmetic	.213	−.126	−.135	−.383	Age
	.723	.430	.658	.378	Intel.
	..	.283	..	.428	Initial
Spelling	−.172	.071	−.180	.270	Age
	.169	.000	.394	.009	Intel.
	..	−.375	..	−.076	Initial
RWAS	−.197	−.157	−.101	−.333	Age
	.390	.435	.615	.225	Intel.
	..	.337	..	.204	Initial
	Age with Intelligence .029		Age with Intelligence −.199		

[1] Probable errors range from .05 for the correlation of .72 to .10 for the zero correlation.

because some of them were negatively correlated with gains in spite of a serious effort to secure reliable gains. Differences in the groups accounting for the larger correlations in the Seneca data have already been presented. The single positive correlation of age with gains in the case of spelling is not due to the sex factor. Scatter diagrams for white men and negro women showed correlations approximating those reported for the racial groups with sexes combined. The averages in

Table XXVII show that the negative correlation found is not due to the heterogeneity of the group. The positive correlation of age with spelling gains is probably due to the fact that more of the older people couldn't write when they took the initial spelling test. For them a little progress in writing brought with it, unearned, an apparent spelling gain due to the fact that they could probably spell a number of words orally at the beginning of the term. The negative correlations

TABLE XXV. CORRELATIONS BETWEEN AGE, INTELLIGENCE, INITIAL SCORE, AND GAIN

(Corrected for Attenuation)[1]

	Clemson		Seneca		
	Initial	Gain	Initial	Gain	
Reading	−.15	−.17	−.07	−.36	Age
	.33	.33	.68	.49	Intel.
	..	.55	..	−.17	Initial
Writing	−.37	−.08	−.19	−.23	Age
	.20	.54	.51	.00	Intel.
	..	.11	..	.02	Initial
Arithmetic	.22	−.15	−.15	−.44	Age
	.85	.58	.76	.47	Intel.
	..	.36	..	.50	Initial
Spelling	−.18	.14	−.19	.40	Age
	.20	.00	.44	.01	Intel.
	..	−.73	..	−.11	Initial
RWAS	−.20	−.19	−.10	−.41	Age
	.44	.58	.68	.30	Intel.
	..	.41	..	.25	Initial
	Age with Intelligence .03		Age with Intelligence −.23		

[1] $r = \frac{r\ x, y.}{\sqrt{r\ x, x_2 . r\ y, y_2}}$

between age and initial score in writing, the zero correlations between intelligence and spelling gain, and the negative correlations between initial spelling scores and spelling gains, all support this conjecture.

The data confirm the findings reported by Thorndike and others,[1] but make no contribution toward the refinement of the curve of learn-

[1] E. L. Thorndike, E. O. Bregman, J. W. Tilton, and E. Woodyard: *Adult Learning*, New York, Macmillan, 1928. In particular, the results are similar to those for American-born and foreign-born adults of inferior intellect, reported on page 251.

ing with age. The numbers in the Clemson intermediate and advanced groups are of little worth for that purpose because the ages are low and the ranges narrow. The Q_1, median, and Q_3 ages are 16:11, 18:9, and 21:1 for the intermediate group, and 17:4, 19:2, and 21:3 for the advanced group. The only use which could be made of these

TABLE XXVI. CORRELATIONS BETWEEN AGE AND GAIN, INITIAL SCORE CONSTANT
(Based upon Corrected Zero Order Coefficients)

	Clemson	Seneca
Reading	−.10	−.37
Writing	−.04	−.23
Arithmetic	−.24	−.39
Spelling	+.01	+.39
RWAS	−.12	−.39

groups in this connection was in disproving the suggestion in Table XXVII, of a rapid rise in learning ability from age 17 to age 22. This was done as follows: Five kinds of gain were averaged for the intermediate and advanced groups. The gains for those from 18–20, and from 21–24 were then expressed as percentages of the gains of those from 14–17. The results are: 100.0, 100.3, and 101.9.

TABLE XXVII. AVERAGE RWAS GAINS FOR VARIOUS AGE GROUPS
(Number of cases in parentheses)

Age Groups	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64
White men	(15) 5.5	(5) 7.4	(3) 3.3	(4) 2.8	(2) 2.5	(1) 6.0	..	..	..	..
White women	(9) 2.8	(6) 5.2	(1) 3.0	..	..	..	..	..	..	..
Negro men	(5) 6.0	(1) 4.0	(3) 4.0	(3) 3.3	(1) 8.0	(1) 9.0	(2) 0.0	..	(2) 4.0	(1) 2.0
Negro women	(1) 4.0	(2) 6.5	..	..	(3) 4.3	(7) 4.1	(4) 3.5	(6) 5.0	(3) 2.3	(1) 2.0

The Relation Between Intelligence Test Score and Learning

The correlations presented in Table XXIV justify the choice and use of the Myers and Pintner tests. Of the ten coefficients between the average Myers and Pintner score with initial achievement score, and of the ten with gain, not one was negative. The three coefficients that are zero do not greatly minimize the validity of the intelligence test scores for school purposes. No evidence was found in Part I of this chapter indicating that other tests would be materially better for use

in such a school. On the other hand, age correlates as highly with gains as does the intelligence scores. Consequently, as a matter of economy, it could have been used to advantage in place of intelligence as the basis for sectioning those who are closely graded on initial scores. This problem should be studied further with the idea of finding out how much of the negative correlation between age and learning is due to a reticence or irritation which older people may feel when they are in the minority. Probably age and intelligence together would be a better basis for sectioning than either alone.

Averages exaggerate relationships,[1] but the reader will miss a striking fact if he fails to note in Table XXVIII, the increase in gain as the intelligence test score increases. All four of the groups studied were supposed to have had, during the month, an opportunity to make as much progress in mastering the fundamental skills as they could. But if the opportunities offered in the lower classes were not limited, why did they make so much less progress? If the adults who made low intelligence test scores made them because they had not previously enjoyed wide opportunity, why did they not make as good use of the opportunity offered as did those with higher intelligence test scores?

TABLE XXVIII. THE RELATION[1] BETWEEN THE INTELLIGENCE OF VARIOUS GROUPS AND PROGRESS

	Average Mental Age	P. E.	Average Composite Gain in Months	P. E.
Seneca Experimental Group....	7:3	7:3± .9 mos.	3.4	3.4± .16
Clemson Experimental Group..	9:0	9:0± 1.1 "	3.9	3.9± .18
Clemson Intermediate Group..	11:9	11:9± 1.7 "	7.5	7.5± .26
Clemson Advanced Group.....	14:0+	14:0± —	9.5	9.5± .25

[1] The errors given in the table are probable errors of measurement.

Three answers will be considered: (1) that previous lack of educational opportunity handicapped those in the lower classes; (2) that the lower gains in the lower classes were made because of the greater age of the students in them; and (3) that those in the lower classes

[1] The reader should not infer from the use of averages that the correlation is low. The contrary is true. Take arithmetic, for example. The correlation between intelligence test score and gain is .76 or .92 corrected for attenuation. This is a very striking validation of an intelligence test score as a basis for predicting learning.

made less progress because they had less native capacity for learning. These answers will be considered in order.

Previous lack of educational opportunity does not explain the facts, for the nature of the unit of measurement rules it out. The gains were computed in units of the school progress made by school children. One month's progress in the seventh grade is the progress made by children who have had six years of schooling. One month's progress in the sixth grade is not the same amount of progress as in the seventh grade, but is the progress made in one month by children who have previously had only five years of schooling. So the unit of progress at every stage is adapted to the amount of schooling which has preceded it. The lower the grade location, the less previous schooling is required for the achievement of "normal" progress for that grade. Therefore, adults with only a year of schooling are not handicapped because of previous lack of educational opportunity in doing what children do in the second grade. In fact, the adults working at the second grade level should be expected to surpass children's second grade progress more easily than they could surpass children's sixth grade progress. The greater difference in mental maturity favors the adult doing the low grade work. The position taken in this paragraph is not a denial of the fact that opportunity begets capacity. The claim is simply that it is not an answer to the questions raised above. The increased capacity which increments of schooling beget, has gone into the making of the norms, or units, in terms of which progress has been measured.

The greater age of the adults in the lower classes is a partial answer. Data presented here and elsewhere show that the older members of a group usually make less school progress than the younger members. It may be shown, however, that age is not the only factor involved. It will be remembered that sections 3 and 4, 8 and 7, and 10 and 9 were working at the same educational level, but that sections 3, 8, and 10 were composed of those who made high scores on the intelligence tests, whereas those in 4, 7, and 9 made low scores. These sections are compared in Table XXIX. In each case, the group which made the lower average intelligence test score made less progress. Neither differences in previous schooling, nor differences in age, account for the differences in gain, for the paired sections were approximately equal in both respects. As further evidence of the fact that age is not the only explanatory factor, the reader is reminded that the average gain made by the advanced group exceeded that of the intermediate

group by a statistically significant difference, which cannot be accounted for by the age difference involved. The difference in gain is 27 per cent whereas the age difference involved accounts for only 1 per cent of the difference.

TABLE XXIX. COMPARISON OF BRIGHT AND DULL SECTIONS

Class	3	4	8	7	10	9
Av. mental age	11:1	9:8	14:+	12:0	14:+	12:2
Average age	19	21	20	18	20	19
Av. initial score (grade location)	3.3	3.3	5.8	5.2	6.5	6.5
Av. gain in months	6.4	3.8	9.0	7.9	9.1	8.2

From the evidence presented above, it is concluded that those in the lower classes made less progress partly because they had less native capacity for learning. This statement should not be interpreted as a hopeless attitude for education. There is no implied denial of the possibilities of greater achievement under more favorable conditions. For that matter, every group proved its ability to learn. In fact, the most remarkable thing about the results is that the groups made from three to nine times as much progress in four weeks as children do, and they did this in spite of the negative correlations between age and learning. The facts do suggest that the illiterate group, in general, should not be thought of as composed of able people who need only an opportunity for an education. To be sure, some are able. For example, two out of the ninety-four in the experimental groups made as much as a year's gain in the four weeks.[1] But when one considers the very small progress made by a large majority of the experimental group it would seem that the raising of the entire illiterate population of South Carolina to the level of functioning literacy were a Herculean task. The facts also suggest that in the effort to eliminate illiteracy emphasis should be placed upon provision of adequate educational opportunity for all children. This view does not in the least minimize the value of adult education. It simply suggests (a) that adult schools cannot make up in any spectacular way for what the public school system should have done, and (b) that as a consequence adult workers should concentrate upon those objectives which will continue to be their unique field.

[1] This gain was in excess of one year by an amount equal to about three times the probable error of measurement.

VIII

Summary and Conclusions

The facts presented in this study suggest certain tentative conclusions and significant problems for further investigation. Important findings and conclusions will be presented briefly. Problems for additional study are reported in conjunction with the findings that suggest them.

The chief results of the educational opportunities provided merit first consideration. During the four-week term, the average progress made in reading, writing, spelling and arithmetic by the students in the Clemson experimental group was equivalent to the progress normally made by primary-grade children in 3.9 school months. The average progress of students in the Seneca experimental group was equivalent to that made by primary-grade children in 3.4 months. Some students made much greater progress than these averages suggest and some made far less. From many points of view the average gains are gratifying. When the fact is considered, however, that we are comparing the progress of adults with that of young children, the gains reported are not altogether satisfactory. Assuming for the moment that the students studied continue to progress during subsequent terms at the same rate, from eight to ten terms will be required on the average for them to attain functioning literacy. When both average progress and individual variations in progress are considered, it becomes evident that high achievement in the subjects which make for literacy can be attained only at the sacrifice of great time and effort on the part of many adults who today are not literate.

An important question is suggested by the foregoing conclusions. Is it desirable to give less emphasis to instruction in reading, spelling, arithmetic and writing in the case of adults who learn very slowly, and greater emphasis to discussions of practical problems and relationships of daily life and to the enrichment of experience through oral and visual means than were provided in this experiment? Before this question can be answered with any degree of finality several steps

should be taken. First, an interesting, informing series of units relating to significant phases of daily living should be developed following an intensive study of the interests and needs of the types of students to which this discussion relates. Second, careful records should be kept of the progress, difficulties and needs of students varying widely in capacity, age, and previous schooling when a carefully planned program of instruction is provided that promotes increased efficiency and happiness in daily living as well as literacy. Third, studies should be made to determine the value and limitations of both types of training on the habits, activities, motives, appreciation and achievements of adults during a year subsequent to training. On the basis of the facts secured it should be possible to develop courses of instruction adapted to the practical needs of illiterate adults who differ widely in learning capacity.

The average progress of the students of the Clemson intermediate group in reading, writing, spelling and arithmetic was equivalent to that normally made by grade-school pupils in 7.5 months. It is obvious that many adult students who have just attained literacy can achieve in from three to four terms in an opportunity school the norms usually reached by pupils completing the elementary school. Such results are very encouraging. Opportunity should, therefore, be provided for students who wish such training to secure it. The fact that the students studied varied widely in the amount of progress which they made indicates that great care and wisdom should be exercised in advising students with respect to their work during a given term. Furthermore, provision should be made for individual students to advance in the three R's as rapidly as their capacity and energy will permit. The distinct difference in the progress of the two sections which at the beginning of the term made similar scores on the achievement tests but significantly different scores on the mental tests emphasizes the importance of the foregoing recommendations.

The instruction given to the students of the intermediate group was limited largely to reading, writing, spelling and arithmetic. This plan was adopted largely through necessity. Unfortunately, very little content material has been provided for literate adults of limited education. Adult education workers have found it necessary, therefore, either to limit instruction largely to the subjects mentioned or to make use of books prepared for grade-school children which fail to supply the information and help which adults need. Before literate adults of

limited education can receive the type of instruction that is essential to increased efficiency and happiness, appropriate teaching materials must be developed. These materials should relate to contemporary social problems, the elements of good citizenship, important scientific facts which aid in understanding the machine age in which we live, the recreational arts, including good reading, music, painting, sculpture and wholesome forms of recreation, health, and home-making. The materials developed should be based directly on adult needs and should be prepared in sufficiently simple form that they may be read with ease and intelligence by students of limited reading achievement. Until such materials are provided adult education at the level with which we are here concerned must remain either very limited and formal in scope or inappropriate in content.

The average progress of the Clemson advanced group in reading, writing, spelling and arithmetic was equal to that made normally by upper-grade pupils in 9.5 months. This fact shows clearly that minor deficiencies in these fundamental subjects can be readily eliminated. The progress made in the other subjects included in the Stanford Achievement Test reveals equally promising possibilities of rapid progress in the content subjects. The chief difficulty which arises at this level relates to the types of elective courses which should be provided in order to meet the diverse interests and needs of students who have completed the general training provided at the intermediate level. In this connection, studies should be made of the interests and needs of students in given communities. Upon the basis of the findings, valuable courses should be developed. A few examples of this type would serve a very valuable purpose in stimulating similar studies in various sections of the country.

The informal training provided at the two opportunity schools was as significant as the formal instruction, if not more significant in many cases. It related to the activities of housekeeping and of eating and serving meals, to physical training and recreation, to good citizenship, to the cultural influences in life, and to religion. No objective measures were secured of the changes in the habits, attitudes, interests and ideals of the students as a result of such training. It was obvious to everyone, however, who observed the students during the course of the term that their participation in the amenities of daily life was notably improved, that their interests were broadened, and that their experiences were greatly enriched. It was very interesting and grati-

fying to note the stimulating effect on many students of the new experiences provided and the broader interests cultivated. In order to accomplish such ends in an opportunity school a rich program of informal activities is essential. Detailed studies are needed, however, of the types of experiences which carry over most effectively into life outside of school and produce desirable changes in attitudes, habits and interests.

The various types of data secured during the course of the investigation were treated statistically to determine significant relationships and for such bearing as they might have upon the psychology of adult learning. Age was found to be positively correlated with size of vocabulary and with a large measure of deliberation. It was found to be negatively correlated with speed, and with the amount learned during the month. In view of these facts, it should not be said off-hand either that age is positively correlated with intelligence, or that it is negatively correlated with intelligence. If a test measures the amount learned, the correlation is negative; similarly, if the test places premium upon speed, the correlation between intelligence and age is negative. But if the test measures deliberation, or if it is largely a vocabulary test, then age is positively correlated with intelligence. These facts suggest that under conditions similar to those that prevailed in this study a speed test may afford the basis for predicting the amount that students might learn even though they score higher on a test that measures deliberation, or vocabulary, or both. In other words, the test which favors age is not necessarily the best test to use for predicting how much the adults will learn in a school situation like the one described.

The implications of these facts for teaching are not clear. It is not known to what extent the lowered speed of older adults is due to decreased capacity or to habit. Nor is it known to what extent older adults learn less because they are slower and more deliberate. It is quite possible that in types of learning which involve a large measure of deliberation, the amount learned is positively correlated with age. Perhaps the methods of teaching now used are patterned too closely after methods used with children, and that other methods would be more suitable for adults. Fortunately, the reduction with age of the amount learned is small and relatively insignificant. All four groups tested made more progress during the month than they would have made as children in the corresponding grades. These statements

should not be interpreted as justifying in any sense the neglect of a state to provide adequate educational opportunities for its youth. Adult agencies cannot make up easily or in any spectacular drive for what the public-school system should do for the youth of the land.

Classification, in this experiment, was based largely upon reading ability, and no departmental teaching was done in the experimental and intermediate group classes. The experiment was organized in this way on the assumption that the students would dislike and even be disturbed by having several teachers. No evidence has been secured concerning the extent to which this assumption is valid. On the other hand, the results of the tests do suggest that a real improvement in classification would have been effected had the students been grouped one way for reading, and another way for arithmetic. Such a double system of grouping should be tried out experimentally. Correlations suggest that both age and intelligence test scores may be used to advantage to supplement achievement test scores as a basis for classification.

Because of the shortness of the term and the smallness of the groups, an effort was made to measure progress in reading, writing, arithmetic and spelling with a higher degree of accuracy than usual. The results indicate that the age and limited education of the groups did not make for inaccuracy. A majority of those in the experimental groups (the oldest and least educated) made a grade score on the second tests which agreed with the first within one-tenth of a grade. In other words, it seems quite unnecessary to test twice in order to get a valid measure of the achievement of groups. It may be necessary, on the other hand, to test individuals two or more times to secure an accurate measure of achievement. The statement should be added that the students applied themselves earnestly and steadily with practically no evidence of embarrassment. It appears, therefore, that if tests are administered as a normal part of the school's program, few or no difficulties will be encountered.

In summary, the facts which have been presented in the study show clearly that agencies of adult education may render invaluable service to adults of limited education. Because of the very nature of the training provided, an opportunity school of the type described in this report has unique possibilities of service. Such schools should be far more widely established. They should supplement the public school and be supported by public funds. Economic needs, parental indifference,

a narrow curriculum and an unstimulating school environment have forced thousands of boys and girls out of school before completing an elementary education. In addition, there are thousands who have had few or no educational advantages whatsoever. Thrown upon their own resources in a complex social organization they are seriously handicapped. Virtually millions of adults, both white and colored, are eager for the advantages which opportunity schools afford. It is imperative that provision be made for such people so that they may become more efficient socially and may live much richer, happier lives.

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